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Insecticide Recommendations

OF THE ENTOMOLOGY
RESEARCH DIVISION
FOR THE CONTROL
OF INSECTS
ATTACKING CROPS
AND LIVESTOCK
1957 Season



AGRICULTURE HANDBOOK No. 120
Agricultural Research Service
and Federal Extension Service
U.S. DEPARTMENT OF AGRICULTURE
APRIL 1957

PRECAUTIONS

Insecticides are poisonous. Handle them with care. Follow the directions and heed all precautions on the container label.

When handling or mixing concentrated insecticides, avoid spilling them on your skin and keep them out of your eyes, nose, and mouth. If any is spilled on the skin or clothing, wash it off and change your clothing immediately. Wear a respirator and goggles when you are working with concentrated sprays or dusts.

Many of the new insecticides can be absorbed directly through the skin in hazardous quantities. In applying them, try to keep them off your skin and away from your eyes, nose, and mouth. Work on the windward side of the crop or animal being treated. When you have finished the job, wash all exposed surfaces of the body with soap and water. Change your clothing if any insecticide is spilled on it.

Parathion, methyl parathion, EPN, TEPP, Guthion, and demeton are extremely poisonous. They should be applied only by a person thoroughly familiar with their hazards who will assume full responsibility for safe use and comply with all the precautions on the labels.

Store insecticides in closed containers in a dry place where children, irresponsible persons, and animals cannot reach them. Keep ethylene dibromide in

a cool place away from dwellings. Be sure that insecticides are clearly labeled.

The fumigants carbon disulfide and ethylene dibromide are very poisonous to man and animals. They should be handled with every possible precaution and only by individuals thoroughly familiar with their hazards. Carbon disulfide is inflammable and explosive. Never open a container of it where there is little air in circulation or expose it near fire in any form. Do not transfer ethylene dibromide from one container to another in a closed room. Do not breathe the fumes.

If you spill one of the fumigant liquids on your skin wash it off promptly with soap and water. Remove immediately any clothing or shoes that have been wet with ethylene dibromide; otherwise severe blistering will result.

If you accidentally swallow an insecticide, induce vomiting by taking 1 tablespoonful of salt in a glass of warm water. Repeat if necessary. Call a doctor.

To protect fish and wildlife, be careful not to contaminate streams, lakes, or ponds with insecticides. Do not clean spraying equipment or dump excess spray material near such water. Avoid getting this material onto pasture grass or feed.

#120 Supp. Feb. 58

Additional recommendations based on establishment of a no-residue status, April 1958, for Bayer 21/199 (CO-RAL) in the fat of animals

Animal and Insect	Formulation and Strength of Bayer 21/199	Dosage (Amount per animal unless otherwise indicated)	Application	Restrictions
Add these recommendations to insecticides given for use on CATTLE, Beef, pages 100-102:				
CATTLE				Do not treat sick animals or calves less than 3 months old. Spray animals 3 to 6 months old only slightly. Do not use in conjunction with pyrethrins, al-lethrin, or syner-gists such as piperonyl butoxide or MGK 264. <u>Do not use on dairy animals.</u> Minimum of 60 days between last appli-cation and slaugh-ter (regardless of purpose for which used).
Beef Cattle grubs	WP, 0.5% S	1 gal. (may be applied in one spraying or in two sprayings of 2 qts. each 2 to 4 wks. apart if animals are small (6 to 12 months) or in short coat.)	Wet animals to skin all over body at end of adult heel fly season.	
Horn flies	WP, 0.5% S	1 to 2 qts. depending on age and size of animals and amount of hair.	To backs every 3 weeks or as needed.	
Lice	WP, 0.5% S	1 to 4 qts. depending on age and size of animals and amount of hair.	Spray thoroughly; repeat after 2 to 3 weeks if needed.	
Screw-worms	WP, 0.5% S	1 to 4 qts. depending on age and size of animals and amount of hair.	Spray wounds thoroughly and wet entire body.	
Ticks	WP, 0.5% S	1 to 4 qts. depending on age and size of animals and amount of hair.	Spray thoroughly; repeat after 2 or 3 weeks or as needed.	
Add these recommendations to insecticides given for use on SHEEP AND GOATS, pages 102 and 103:				
SHEEP AND GOATS				
Lice	WP, 0.25% S	1 to 4 qts. depending on age and size of animals and amount of hair.	Spray thoroughly; repeat after 2 or 3 weeks if needed.	
Screw-worms	WP, 0.25% S	1 to 4 qts. depending on age and size of animals and amount of hair.	Spray wounds thoroughly and wet entire body.	
Keds (sheep ticks)	WP, 0.25% S	1 to 4 qts. depending on age and size of animals and amount of hair.	Spray thoroughly; repeat after 2 or 3 weeks or as needed	
Ticks	WP, 0.25% S	1 to 4 qts. depending on age and size of animals and amount of hair.	Spray thoroughly; repeat after 2 or 3 weeks or as needed.	
Add these recommendations to insecticides given for use on SWINE, page 104:				
SWINE				
Lice	WP, 0.5% S	1 to 4 qts. depending on age and size of animals.	Spray thoroughly, repeat after 2 to 3 weeks if needed.	
Screw-worms	WP, 0.5% S	1 to 4 qts. depending on age and size of animals.	Spray wounds thoroughly and wet entire body.	

INSECTICIDE RECOMMENDATIONS OF THE ENTOMOLOGY RESEARCH DIVISION
FOR THE CONTROL OF INSECTS ATTACKING CROPS AND LIVESTOCK

1957 Season

Foreword

The recommendations of the Entomology Research Division, Agricultural Research Service, as of March 15, 1957, for the chemical control of insects and mites that attack food, feed, tobacco, and fiber crops and livestock are presented in these tables. The information was compiled by the various Sections of this Division in consultation with the Pesticide Regulation Section of the Plant Pest Control Division and the Federal Extension Service, and was coordinated by Arlo M. Vance.

It is emphasized that these recommendations are those made by the Entomology Research Division. There are other recommendations and other materials registered for use that will leave no residues or residues within the tolerances set under Public Law 518, the Miller amendment to the Federal Food, Drug, and Cosmetic Act.

Official tolerances for a number of the insecticides now recommended have not yet been announced by the Food and Drug Administration. As they are announced, the Department will review the recommendations and make such changes as are necessary to insure that residues do not exceed the tolerances. Since the status of many chemicals is changing rapidly, we suggest that you keep in touch with the Department of Agriculture, your land-grant college, or manufacturers of specific products for up-to-date information.

Most of the recommendations listed in this Handbook appear in one or more of the references cited. However, some of them have been modified since the publications were issued, and others are new and have not previously appeared in print. When the recommendations given in this Handbook differ from Entomology Research Division recommendations in other publications, the grower or livestock producer should follow those in the Handbook. The recommendations are limited to the 1957 growing season.

E. F. Knipling, Director
Entomology Research Division

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EXPLANATION OF TABLES

"Formulation" refers to the form or concentration of the undiluted insecticide to be used at the designated dosage. Dusts and granules are usually applied at the strength purchased. Unless otherwise indicated, emulsifiable concentrates and wettable powders are to be diluted with water, the amount depending on the output of the equipment, and applied as sprays.

A dash in the tolerance column means that no tolerance had been established at the time these recommendations were prepared. A dash in other columns indicates that there are no data for the insecticide that is opposite it on the same line.

The following abbreviations are used:

Bait	B
Dust	D
Emulsifiable concentrate . .	EC
Granules	G
Spray.	S
Wettable powder.	WP

The titles of the numbered references are given on pages 107-109.

LEGUME AND GRASS INSECTS

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
ALFALFA								
Alfalfa caterpillar	Methoxychlor	100	25% EC	1½-2 qt.	If there are 10 or more caterpillars per sweep of net, usually when alfalfa is 1/3 grown.	7		L 325
Alfalfa weevil								
<u>Larvae</u>	Aldrin	0	EC or 1% D	2 oz. aldrin	In May or June.	15	--	PS 28, L 368, Utah Cir. 135 and Ext. Cir. 213
On hay crop in West	Heptachlor	0.1	EC or 2.5% D	3/4 oz. heptachlor	do.	3	--	
	Methoxychlor	100	EC or 10% D	1-2 lb. methoxychlor	do.	7	--	
	Parathion	1	EC or 1% D	4 oz. parathion	do.	15	See Precautions.	
On seed crop in West	DDT	--	25% EC 10% D	3-4 qt. 20 lb.	As soon as buds appear.		Do not feed treated alfalfa to dairy or meat animals, or poultry.	
	Dieldrin	0	EC	4 oz. dieldrin	--			
On crop in East	Heptachlor	0.1	EC	4 oz. heptachlor	Last half of April when plants are 10-15 in. tall; second applica- tion not later than 2 weeks before harvest; also to stubble as soon as crop is removed.	7		
<u>Adults</u>	Dieldrin	0	EC	4 oz. dieldrin	In spring when alfalfa is not over 2 in. tall.	--	Do not pasture dairy or meat animals on alfalfa treated with dieldrin until after first cutting.	
On crop in West	Heptachlor	0.1	EC 2.5% D	4 oz. heptachlor 12 lb.	do.	7		
Clover leaf weevil	Methoxychlor	100	EC	1 lb. methoxychlor		7		FB 1484

LEGUME AND GRASS INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
ALFALFA (con.)								
Grasshoppers	Aldrin	0	EC or D	2 oz. aldrin	When grasshoppers are young.	15	—	Utah Cir. 135 and FB 2064
	Heptachlor	0.1	EC D	2-4 oz. heptachlor 3-6 oz. heptachlor		7 —	Do not feed alfalfa for 10 days after treatment with heptachlor at more than 4 but not over 8 oz. per acre.	
Lygus bugs, leaf- hoppers, thrips, and yellow-striped armyworm	DDT	—	25% EC 10% D EC	3-4 qt. 20 lb. $\frac{1}{2}$ lb. DDT	As soon as buds appear. do. During bloom.		Do not feed alfalfa treated with these insecticides to dairy or meat animals, or poultry. When alfalfa is in bloom, apply toxaphene spray or dust or DDT spray in evening or morning when bees are not active.	Utah Cir. 135 and Ext. Bul. 221
On seed crop in West	Dieldrin	0	EC ($1\frac{1}{2}$ lb./gal.) 1.5% D	$1\frac{1}{2}$ pt. 17 lb.	Only in early bud stage. do.			
	Toxaphene	—	EC 10% D	$1\frac{1}{2}$ lb. toxaphene 20 lb.	During bloom 3-4 weeks after bud-stage treat- ment.			
Meadow spittlebug	<u>Spring treatment</u>							L 341 and Ohio Pub. Ser. 22
	Heptachlor	0.1	EC	$\frac{1}{4}$ lb. heptachlor	Within week after eggs begin to hatch, when alfalfa is 4-6 in. high, from early April to May 20.	7		
	Methoxychlor	100	EC	1 lb. methoxychlor		7		
	<u>Fall treatment</u>							
	Methoxychlor	100	EC	$1\frac{1}{2}$ lb. methoxychlor		7		

LEGUME AND GRASS INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
ALFALFA (con.)				Amount in bait formula				
Mormon cricket	Aldrin	0	Baits EC or WP for wet bait; oil soln. for dry bait.	2 oz. aldrin	Prepare all baits according to direc- tions in reference. Spread wet or dry bait ahead of advancing band of crickets at 10-20 lb. per acre.		Store bait where livestock cannot reach it. Do not pile it on ground. Keep livestock off air strips where planes are being loaded. Try not to spill bait; clean up any that is spilled.	FB 2081
	Chlordane	—	do.	½ lb. chlordane				
	Heptachlor	0.1	do.	4 oz. heptachlor				
	Sodium fluosilicate	—	Powder (for wet bait only)	4 lb.				
	Toxaphene	—	EC or WP for wet bait; oil soln. for dry bait.	1 lb. toxaphene				
Pea aphid								
On seed crop	DDT	—	25% EC 10% D	3-4 qt. 20 lb.	Before bloom.	—	Do not feed alfalfa treated with DDT to dairy or meat animals or poultry. See Precautions. do.	Utah Cir. 135 and Ext. Cir. 221
On seed or forage crop	Malathion	8	EC (5 lb./gal.) 4% D	1-2 pt. 30 lb.	do.	7		
	Parathion	1	25% EC 1% D	1 pt. 30-35 lb.	do.	15		
	TEPP	—	40% EC	1 pt.	Before bloom or in evening during bloom period to avoid killing bees.	3		
Potato leafhopper	Methoxychlor	100	25% EC	1 qt.	When alfalfa is about half grown or earlier if insect becomes abundant.	7		L 229

LEGUME AND GRASS INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
ALFALFA (con.)								
Red harvester ant	Carbon disulfide	--	Fumigant	<u>Per colony</u> 4 fl. oz.	Pour into entrance hole of nest.		See Precautions.	FB 1668
	Chlordane	--	5% D	½ lb.	Spread thinly in con- tinuous band 4-6 in. wide, in circle 5-6 ft. in diameter centering at nest entrance.		Do not dust vegeta- tion that may be eaten by man or livestock. Do not broadcast dust.	
	Dieldrin	0	1.5% D	¾ lb.				
Spider mites	Sulfur	Safe	D	25 lb.	Before plants bloom, and again 10 days later if needed.			Utah Cir. 135
Spotted alfalfa aphid	Malathion	8	EC (5 lb./gal.) 5% D	1 pt. 15 lb.		7	--	
	Parathion	1	25% EC	1 pt.		15	See Precautions.	
Thrips. See Lygus bugs.								
Tortricid moth	Parathion	1	EC	½ lb. parathion	In May as soon as over- wintering larvae start tying top leaves of plants.	15	See Precautions.	Utah Cir. 135
Yellow-striped armyworm. See Lygus bugs.								
CLOVER								
Clover leaf weevil	. . . . . Same as for Alfalfa							
Clover seed weevil On seed crop	DDT	--	5% D	20 lb.	When 20% of clover heads are withered and brown, in early morning or late evening when bees are inactive.		Do not feed treated clover to dairy or meat animals, or poultry.	Oreg. Cir. Inf. 485

LEGUME AND GRASS INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
CLOVER (con.)								
Grasshoppers	. . . . . Same as for Alfalfa							
Meadow spittlebug	do.							
GRASS (range and pasture)								
Grasshoppers	Aldrin	--	EC, WP, oil soln., or D	2-4 oz. aldrin		--	Do not feed plants treated with aldrin, chlordane, or toxaphene to dairy animals or animals being finished for slaughter. Do not feed plants for 10 days after treatment with heptachlor at more than 4 but not over 8 oz. per acre.	FB 2064
	Chlordane	--	EC, WP, or oil soln. D	$\frac{1}{2}$ -1 lb. chlordane $\frac{3}{4}$ -1 $\frac{1}{2}$ lb. chlordane		--		
	Heptachlor	0.1	EC, WP, or oil soln. D	2-4 oz. heptachlor 3-6 oz. heptachlor		7		
	Toxaphene	--	EC, WP, or oil soln. D	1-1 $\frac{1}{2}$ lb. toxaphene 1 $\frac{1}{2}$ -2 $\frac{1}{4}$ lb. toxaphene		--		
Mormon cricket	. . . . . Same as for Alfalfa (Except that aldrin does not have a tolerance on grass)							
White-fringed beetles	DDT	--	EC, WP, D, or G	25 lb. DDT	Only in winter and early spring to surface of noncultivated land not used for grazing animals, under general direction of Federal or State white-fringed beetle personnel.			L 401
	Dieldrin	--	EC, WP, D, or G	3-5 lb. dieldrin				

LEGUME AND GRASS INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
PEANUTS								
Corn earworm	DDT	7	3% D	25 lb.			Do not feed foliage treated with DDT or toxaphene to dairy or meat animals.	FB 2063
Fall armyworm	Toxaphene	7	20% D	10 lb.				
Potato leafhopper	DDT	7	1% D	First application 20 lb., second and third applications 25 lb.	First application about July 10, second 3 wk. later, and third 3 wk. after second.			
Southern corn rootworm	Aldrin	Peanuts, 0.25 Hay, 0	5% D 2% G In mixture with fertilizer.	40 lb. 100 lb. 2 lb. aldrin	To soil before planting. Broadcast dust with duster. Broadcast granules or insecti- cide-fertilizer mixture with fertilizer dis- tributor, or apply to row with fertilizer side-dressing attach- ments. If broadcast cultivate immediately after application, working insecticide into top 3-4 in. of soil.			L 391
	Heptachlor	0.1	5% D 2.5% G In mixture with fertilizer.	40 lb. 80 lb. 2 lb. heptachlor				
Tobacco thrips	DDT	7	25% EC 3% D	3 pt. 10 lb.	As soon as injury appears and again 10 days later.		Do not feed treated foliage to dairy or meat animals.	FB 2063
Velvetbean caterpillar	DDT	7	3 or 5% D	20 lb.		—	Do not feed foliage treated with DDT or toxaphene to dairy or meat animals.	L 348
	Methoxychlor	Peanuts, 14 Peanut forage, 100	5% D	20 lb.		7		
	Toxaphene	7	10% D	15 lb.		—		

LEGUME AND GRASS INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
PEANUTS (con.)				<u>Insecticide per acre</u>				
White-fringed beetles	Aldrin	Peanuts, 0.25 Hay, 0	EC, WP, D, or G	Broadcast 3 lb. In drill row 3/4-1 1/2 lb.	Broadcast on soil when preparing for planting and immediately work into upper 3 in. Or apply insecticide alone or mixed with a fertilizer in drill row at time of planting.			L 401
	Chlordane	0.3	EC, WP, D, or G	Broadcast 5 lb. In drill row 1-2 lb.				
	DDT	7	EC, WP, D, or G	Broadcast 10 lb. In drill row 2-3 lb.				
	Dieldrin	--	EC, WP, D, or G	Broadcast 1 1/2 lb. In drill row 1/2-3/4 lb.				
	Heptachlor	0.1	EC, WP, D, or G	Broadcast 3 lb. In drill row 3/4-1 1/2 lb.				
SOYBEANS								
Mexican bean beetle	Malathion	--	25% WP 5% D	4 lb. 35 lb.	To under surface of leaves.	7	--	FB 1624
	Methoxychlor	100 (on forage)	50% WP 5% D	3 lb. 35 lb.		7	--	
	Parathion	--	25% WP 2% D	2 lb. 35 lb.		15	See Precautions.	
Velvetbean caterpillar	. . . . . Same as for Peanuts (Exceptions: DDT and toxaphene do not have tolerances; methoxychlor has tolerance of 100 p.p.m. on soybean foliage)							
SWEETCLOVER								
Sweetclover weevil	Aldrin	--	EC (2 lb./gal.)	1 qt.	Early in spring to new stands to protect them from overwintering adults. do. To control newly emerged adults migrating from old stands in midsummer, apply heptachlor only.	--	Do not pasture dairy or meat animals on alfalfa treated with aldrin or dieldrin until after first cutting.	Neb. E. C. 55-1574
	Dieldrin	--	EC (1 1/2 lb./gal.)	1 1/2 qt.		--		
	Heptachlor	0.1	EC (2 lb./gal.)	1 qt.		10		
VETCH (seed crop)								
Vetch bruchid	DDT	--	3% D	25 lb.	As soon as first pods appear.	--	Do not feed treated vetch to dairy or meat animals.	Oreg. Cir. Inf. 372

CORN, SORGHUM, AND SMALL-GRAIN INSECTS

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
CORN ^{1/}								
Armyworm	DDT	--	25% EC	3 qt.	When larvae are young.		Do not feed corn plants treated with DDT to dairy animals. Do not feed ensilage made from corn plants treated with DDT to dairy animals or animals being finished within 90 days of slaughter.	FB 1850
	Toxaphene	--	45% EC 60% EC	1½ qt. 1 qt.	do.		Do not feed corn plants treated with toxaphene or ensilage made from treated plants to dairy animals or animals being finished for slaughter.	
Chinch bug Border rows	Dieldrin	0	EC (1½ lb./gal.)	1½ pt.	To base of plants where bugs congregate. Coat or wet the bugs.		Do not feed corn plants treated with dieldrin or ensilage made from treated plants to dairy or meat animals.	L 364
	Toxaphene	--	EC or WP 10% D 20% D	2 lb. toxaphene 20 lb. 10 lb.	do.		Do not feed corn plants treated with toxaphene or ensilage made from treated plants to dairy animals or animals being finished for slaughter.	

^{1/}See also Sweet Corn under Vegetable, Bramble, and Strawberry Insects.

Chinch bug continued on page 11.

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
CORN (con.)								
Chinch bug (con.) Barrier strips	Dieldrin	0.1 (on small grains) 0.75 (on small grain straw) 0 (on corn)	EC (1½ lb./gal.)	2 pt.	Strip 4 rods wide, half along edge of small- grain field and half along edge of crop to be protected, and strip across each end; repeat 1 or 2 weeks later if needed.		Do not harvest small grain within 7 days after it is treated with dieldrin. Do not graze or feed straw within 30 days of harvest. Do not feed treated corn plants or ensilage made from treated plants to dairy or meat animals.	
Corn earworm								FB 1651 and PS 11
On dent corn larvae in whorl, budworm damage	DDT	—	25% EC 1 gal. + light mineral oil ½ gal. to make 25 gal.	25 gal. spray	To entire plant before tasseling and silking.		Do not feed treated corn plants or ensilage made from treated plants to dairy animals or animals being finished for slaughter.	
On seed corn, larvae in silks and ear tips	DDT	—	25% EC 3 gal. + light mineral oil 7 gal. to make 100 gal.	25 gal. spray	With high-clearance sprayer having 4 nozzles per row. Direct spray to ears. Make first application no later than 2 days after silks appear; repeat 3 days or 2 and 4 days later.			
European corn borer on dent corn	DDT	—	EC 5% D 5% G	1½ lb. DDT 40 lb. 12 lb. (Increase to 20 lb. if applied by air.)	When ¾ of plants show feeding in whorl; and again 7 days later if new feeding is evident.		Do not feed corn plants treated with DDT to dairy ani- mals. Do not feed ensilage made from corn plants treated with this insecti- cide to dairy ani- mals or animals being finished within 90 days of slaughter.	Iowa Pamphlet 176 and FB 2084
	Ryania	Exempt	40% D	30-40 lb.				

CORN, SORGHUM, AND SMALL-GRAIN INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
CORN (con.)								
Fall armyworm	DDT or TDE	--	EC 5% D	1 lb. DDT or TDE 40 lb.	When larvae are small.		Do not feed corn plants treated with these insecticides or ensilage made from treated plants to dairy animals or animals being finished for slaughter.	FB 1990 and PS 12
	Toxaphene	--	EC 10 or 20% D	1½-2 lb. toxaphene 20 or 10 lb.	do.			
On dent corn, larvae in whorl, budworm damage	DDT	--	25% EC 1 gal. + light mineral oil ½ gal. to make 25 gal.	25 gal. spray	To entire plant before tasseling and silking.			
Grasshoppers	..... Same as for Grass (Except that tolerance for aldrin on corn is 0)						Do not feed corn plants treated with aldrin, chlordane, or toxaphene, or ensilage made from treated plants to dairy animals or animals being fin- ished for slaughter. Do not feed plants for 10 days after treatment with heptachlor at more than 4 but not over 8 oz. per acre.	
Mormon cricket	..... Same as for Alfalfa							
Southern corn rootworm	Aldrin	0	EC (2 lb./gal.) 2.5% D Aldrin-fertilizer mixture	1 or 2 qt. 20 or 40 lb. ½ or 1 lb. aldrin	Minimum dosage to row or hills when planting; maximum dosage broad- cast before planting and immediately work into top 3 or 4 in. of soil.			L 391
	Chlordane	--	45% EC 5% D Chlordane-ferti- lizer mixture	2 or 3 pt. 20 or 40 lb. 1 or 1½ lb. chlordane				
	Heptachlor	0.1	EC (2 lb./gal.) 2.5% D Heptachlor-ferti- lizer mixture	1 or 2 qt. 20 or 40 lb. ½ or 1 lb. heptachlor				

CORN, SORGHUM, AND SMALL-GRAIN INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
CORN (con.)								
Sugarcane beetle	Aldrin	0	EC (2 lb./gal.) 5% G	2 qt. 20 lb.	In 6-8 in. band on top of row at planting time or as soon as possible after corn comes up.		Do not apply after plants are 6 inches high.	
	Heptachlor	0.1	EC (2 lb./gal.) 2.5% G	2 qt. 40 lb.				
SORGHUM								
Corn earworm and corn leaf aphid on heads for seed	Aldrin	0	EC	72 mg. aldrin per bag	Streak inside of paper bags to be placed over sorghum heads.		Do not feed heads of sorghum that have been protected with aldrin-treated bags to dairy animals or animals being fin- ished for slaughter, or poultry.	
Chinch bug	. . . . . Same as for Corn						Do not feed sorghum plants or grain treated with aldrin, chlordane, DDT, dielldrin, TDE, hepta- chlor, or toxaphene to dairy animals or animals being fin- ished for slaughter, or poultry.	FB 1566
Fall armyworm	do.							
Grasshoppers	. . . . . Same as for Grass (Except that heptachlor does not have a tolerance and restrictions for its use on grass do not apply)							
Sorghum midge	DDT	--	5% D	25 lb.				
	. . . . . Also same as for Corn earworm and Corn leaf aphid on sorghum							
SMALL GRAINS								
Armyworm	. . . . . Same as for Corn						Do not feed small grain plants treated with dielldrin, DDT, or toxaphene, or straw or threshings from the treated crop, to dairy ani- mals or animals being finished for slaughter.	
Chinch bug	. . . . . Same as for barriers for Chinch bug on corn							

CORN, SORGHUM, AND SMALL-GRAIN INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
SMALL GRAINS (con.)							Do not feed small grain plants treated with aldrin, chlordane, heptachlor, DDT, TDE, or toxaphene, or straw or threshings from the treated crops, to dairy animals or animals being finished for slaughter.	
Fall armyworm	. . . . . Same as for Corn							
Grasshoppers	. . . . . Same as for Grass (Except that heptachlor does not have a tolerance and restrictions for its use on grass do not apply)							
Greenbug on barley, oats, and wheat	Parathion	1	25% EC 1 or 2% D	1 pt. 25 or 12½ lb.	When temperature is 50°F. or above.	15	See Precautions.	L 309
Mormon cricket	. . . . . Same as for Alfalfa (Except that aldrin has a tolerance of 0.1 p.p.m., and heptachlor does not have a tolerance on small grains)							
Red harvester ant	. . . . . Same as for Alfalfa (Except that dieldrin has a tolerance of 0.1 p.p.m. on small grains)							
Winter grain mite	Malathion	--	EC (5 lb./gal.)	1 pt.		7	--	●
	Parathion	1	25% EC	1 pt.		15	See Precautions.	
	TEPP	--	EC	¼ lb. TEPP		3	do.	
White-fringed beetles	. . . . . Same as for Peanuts (Except that aldrin and dieldrin have a tolerance of 0.1 p.p.m., and chlordane, DDT, and heptachlor do not have tolerances on small grains)							

SUGAR-BEET AND SUGARCANE INSECTS

Restriction 1.--Do not use tops treated with DDT, chlordane, or toxaphene for food. Do not feed treated tops to dairy or meat animals.

Restriction 2.--Parathion and TEPP are extremely poisonous. They should be applied only by a person familiar with the hazards who will assume full responsibility for safety and enforce the precautions prescribed by the manufacturers.

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
SUGAR BEETS								
Aphids	Parathion	--	D, EC, or WP	$\frac{1}{4}$ - $\frac{1}{2}$ lb. parathion	On foliage.	15	Restriction 2.	FB 2060
	TEPP	--	EC or D	$\frac{1}{4}$ - $\frac{1}{2}$ lb. TEPP	do.	3	do.	
Armyworms and beet leafhopper	DDT	--	10% D	20-30 lb.	On foliage of young plants.		Restriction 1.	
	Toxaphene	--	D	4-6 lb. toxaphene				
Blister beetles	DDT	--	10% D	20-30 lb.	On beetles.		do.	
	Toxaphene	--	D	4-6 lb. toxaphene	do.		do.	
Cutworms	DDT	--	D, WP, or EC	2 lb. DDT	On soil surface and work into top 2 in.		do.	
	Toxaphene	--	D, WP, or EC 3% B (dry)	3 lb. toxaphene 20 lb.	do. Scatter on soil sur- face late in afternoon.		do.	
Flea beetles	DDT	--	5% D	20 lb.	On foliage.		do.	
Grasshoppers	Toxaphene	--	B, WP, or EC	1 $\frac{1}{2}$ -2 lb. toxaphene	On foliage and soil.		do.	
Leaf miners	Parathion	--	D, EC, or WP	$\frac{1}{4}$ - $\frac{1}{2}$ lb. parathion.	On foliage.	15	Restriction 2.	
Lygus bugs	DDT	--	D, WP, or EC	2 lb. DDT	On foliage of plants in soft-seed stage.		Restriction 1.	
	Toxaphene	--	D, WP, or EC	3 lb. toxaphene				
Root maggots	Aldrin	0.1	75% WP D, WP, or EC	$\frac{1}{2}$ lb. aldrin/100 lb. seed 3 lb. aldrin	Mix dry with seed. To soil surface and work into top 3 in.		-- Apply before planting.	
	Heptachlor	0.1	D, WP, or EC 75% WP	2 lb. heptachlor $\frac{1}{2}$ lb. heptachlor/100 lb. seed	do. Mix dry with seed.		do. --	

SUGAR-BEET AND SUGARCANE INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
SUGAR BEETS (con.)								
Spider mites	Sulfur	Safe	D	30 lb.	On foliage.			FB 2060
Stink bugs	Toxaphene	--	D, WP, or EC	6 lb. toxaphene	On foliage of plants in seed stage.		Restriction 1.	
Webworm	Endrin	0	EC or D	6 oz. endrin	On foliage when insects appear.	60	--	FB 2060
	Parathion	--	D, EC, or WP	$\frac{1}{4}$ - $\frac{1}{2}$ lb. parathion	do.	15	Restriction 2.	
	Toxaphene	--	D, EC, or WP	3 lb. toxaphene	do.	--	Restriction 1.	
White grubs	Chlordane	--	D, WP, or EC	10 lb. chlordane	To soil surface and work into top 3-4 in.		Apply before planting.	FB 1798
Wireworms	Aldrin	0.1	D, WP, or EC	4 lb. aldrin	To soil surface and work into top 6-9 in.		Apply before planting or after harvest.	FB 1866
	Chlordane	--	D, WP, or EC	10 lb. chlordane				
	DDT	--	D, WP, or EC	10 lb. DDT				
	Heptachlor	0.1	D, WP, or EC	3 lb. heptachlor	Inject 8 in. deep into fallow soil every 12 in.		Do not apply within 3 weeks before planting.	
	Ethylene dibromide	--	40% soln. (3.6 lb./gal.) 85% soln. (12 lb./gal.)	10 gal. 3 gal.				
SUGARCANE								
Sugarcane borer	Cryolite	--	D containing 85- 90% sodium fluoaluminate	8 or 10 lb. cryolite	Minimum dosage with ground machine and maximum with aircraft.			C 878
	Ryania	Exempt	40% D	8 or 10 lb.	For first generation apply 4 times at weekly intervals beginning with general hatching about April 15. For second generation in fields not already dusted, apply 4 times at weekly intervals beginning with general hatching about June 15.			
Wireworms	Chlordane	--	1% D	200 lb.	Apply on cane seed pieces in open furrow at time of planting in fall.			
Small soil arthropods	Chlordane	--	5% D	40 lb.				

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS

Recommendations and tolerances given in this section apply only to crops to be used as human food and not as forage or for livestock feed. None of these recommendations apply to any crop that has been harvested or will be harvested within the next day.

The restrictions referred to by number in the table are as follows:

Restriction 1.--Do not apply DDT or toxaphene to beet, broccoli, brussels sprouts, carrot, collard, kale, kohlrabi, mustard, leaf lettuce, rutabaga, spinach, swiss chard, or turnip after the first appearance of leaves, stems, or heads that are to be eaten, marketed, or fed to dairy or meat animals.

Restriction 2.--Do not use parathion, TEPP, or demeton in the home garden. These insecticides are extremely poisonous and should be applied only by a trained operator who will enforce the precautions prescribed by the manufacturers and assume full responsibility for safety.

Restriction 3.--Do not feed DDT-treated bean plants to dairy or meat animals.

Restriction 4.--Do not apply chlordane to leafy vegetables past the seedling stage of growth, or after the first appearance of foliage that is to be eaten, marketed, or fed to dairy or meat animals.

Restriction 5.--Do not use lindane in fields to be planted later to potatoes or other root crops, as it may adversely affect their flavor.

Restriction 6.--Aerosols that are effective for use on plants usually contain the poison gas methyl chloride. Regardless of the insecticide in these aerosols they should be applied only by a trained operator who will enforce the precautions prescribed by the manufacturers and assume full responsibility for safety.

Restriction 7.--Do not apply DDT or toxaphene to cabbage or to head lettuce after the heads begin to form if any of the outer leaves are to be left on them at harvest. DDT and toxaphene may be applied up to 7 days before harvest if all outer leaves are stripped from the heads at harvest.

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
ASPARAGUS								
Asparagus beetle	DDT	7	5% D 25% EC 50% WP	20-35 lb. 4 pt. 4 lb.	On foliage.		Do not use DDT during cutting season.	HG 46, FB 1646
	Rotenone	Exempt	0.75% D 5% powder	20-35 lb. 2½ lb. in S				
BEANS								
Aphids	Malathion	8	5% D 25% WP 50% EC	20-35 lb. 6 lb. 2 pt.	On foliage.	3		HG 46
	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	2 pt. in S	do.	3		
	Parathion	1	2% D	25-35 lb.	do.	Snap beans 21, others 15	Restriction 2.	
Bean leaf beetle	DDT	7	3-5% D 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	On foliage.	Dry beans 1, others 7	Restriction 3. Apply sparingly; heavy dosages may injure beans.	HG 46
	Rotenone	Exempt	0.75-1% D 5% powder	20-35 lb. 2½ lb. in S	do.	--		

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
BEANS (con.)								
Corn earworm	DDT	7	3-5% D 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	On foliage.	Dry beans 1, others 7	Restriction 3. Apply sparingly; heavy dosages may injure beans.	HG 46
	Methoxychlor	14	5% D 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	do.	7	--	
Cutworms (in soil)	DDT	7	D, WP, or EC	2 lb. DDT	To soil surface.		Do not apply on plants past seedling stage.	
	Toxaphene	7	D, WP, or EC 3% B	2 lb. toxaphene 40 lb.	do. Spread on soil (not plants) in late afternoon.		do. --	
Japanese beetle	DDT	7	. . . . . Same as for Bean leaf beetle					
	Methoxychlor	14	. . . . . Same as for Corn earworm					
Leafhoppers	DDT	7	. . . . . Same as for Bean leaf beetle					
	Malathion	8	. . . . . Same as for Aphids.					
	Methoxychlor	14	. . . . . Same as for Corn earworm					
	Parathion	1	. . . . . Same as for Aphids.					
Lima-bean pod borer	DDT	7	. . . . . Same as for Bean leaf beetle					
Lygus bugs	DDT	7	D, WP, or EC	1½-2 lb. DDT	On foliage when pods begin to form; lima beans only.	1	Restriction 3.	
Mexican bean beetle	Malathion	8	5% D 25% WP 50% EC	20-35 lb. 6 lb. 2 pt.	On foliage.	3	--	FB 1624
	Methoxychlor	14	5% D 25% EC 50% WP	20-35 lb. 3 pt. 3 lb.	do.	7	--	
	Parathion	1	D, EC, or WP	½ lb. parathion	do.	Snap beans 21, other 15.	Restriction 2.	
	Rotenone	Exempt	0.75%-1% D 5% powder Extract	20-35 lb. 2½ lb. in S 2 oz. rotenone in S	do.	--	--	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
BEANS (con.)								
Root maggots	Aldrin Dieldrin Lindane	0 0 10	Slurry: 1/3 oz. 75% WP + 1 1/2 oz. thiram 75% WP in 1 cup water	1 pt./100 lb. bean seed	Mix with seed and dry at least 1 hour within 30 days of planting.			L 370
Spider mites	Aramite	Snap beans 1, others 0	3% D 15% WP	20-35 lb. 1 1/2 lb.	On foliage.	Snap, 15	Do not apply Aramite to beans other than snap beans while pods are on plants.	HG 46
	Demeton	0.3	EC	1-1 1/2 lb. demeton	do.	21	Restriction 2.	
	Malathion	8	. . . . . Same as for Mexican bean beetle					
	Parathion	1	do.					
Cucumber beetles	DDT	7	. . . . . Same as for Bean leaf beetle					
	Rotenone	Exempt	. . . . . Same as for Mexican bean beetle					
Stink bugs	DDT	7	. . . . . Same as for Bean leaf beetle					
	Sabadilla	Exempt	20% D	20-35 lb.	On foliage.			HG 46
Western bean cutworm	DDT	7	5% D	20-30 lb.	On foliage as soon as young worms are found.	Dry beans 1, others 7	Restriction 3.	Idaho Ext. Bul. 233
Wireworms	Chlordane	0.3	D, WP, or EC	4-10 lb. chlordane	To soil surface every 2-5 years and work into top 6-9 in.		Apply either before planting or after harvest. DDT recom- mended only in irrigated lands in West.	FB 1866
	DDT	7	D, WP, or EC	10 lb. DDT				
	Dieldrin	0	D, WP, or EC	3 lb. dieldrin				
	Ethylene dibromide	Lima beans 5 (inor- ganic bromides)	40% soln. (3.6 lb./gal.) 85% soln. 12 lb./gal.)	10 gal. 3 gal.	Inject 8 in. into fallow soil every 12 in.		Do not apply within 3 weeks before planting.	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
BEETS (table)								
Beet webworm	DDT	7	5% D 50% WP 25% EC	20-30 lb. 3 lb. 2 qt.	On foliage.		Restriction 1.	HG 46
	Pyrethrum	Exempt	0.2% D EC	20-30 lb. $\frac{1}{2}$ oz. pyrethrins	do.		--	
	Toxaphene	--	10% D EC or WP	20-30 lb. 2-3 lb. toxaphene	do.		Restriction 1.	
Blister beetles	DDT	7	5% D 50% WP 25% EC	20-30 lb. 3 lb. 2 qt.	On beetles.	--	Restriction 1.	
	Methoxychlor	14	5% D 50% WP 25% EC	20-30 lb. 3 lb. 2 qt.	do.	Tops 14, roots 7	--	
Cutworms	DDT	7	D, WP, or EC	2 lb. DDT	To soil surface before planting.		Restriction 1.	
	Toxaphene	--	D, WP, or EC 3% B	3 lb. toxaphene 40 lb.	do.		do.	
Flea beetle (adults)	DDT	7	5% D 50% WP 25% EC	20-30 lb. 3 lb. 2 qt.	On foliage.	--	Restriction 1.	
	Methoxychlor	14	5% D 50% WP 25% EC	20-30 lb. 3 lb. 2 qt.	do.	Tops 14, roots 7	--	
	Rotenone	Exempt	0.75-1% D 5% powder	20-30 lb. 2 $\frac{1}{2}$ lb. in S	do.	--	--	
Wireworms	Chlordane	0.3	D, WP, or EC	4-10 lb. chlordane	To soil surface every 2-5 years and work into top 6-9 in.		Apply either before planting or after harvest. DDT recommended only in irrigated lands in West.	FB 1866
	DDT	7	D, WP, or EC	10 lb. DDT				
	Dieldrin	0.25	D, WP, or EC	3 lb. dieldrin				
	Heptachlor	0.1	D, WP, or EC	3 lb. heptachlor				
	Ethylene dibromide	--	40% soln.(3.6 lb./gal.) 85% soln. (12 lb./gal.)	10 gal. 3 gal.	Inject 8 in. into fallow soil every 12 in.		Do not apply within 3 weeks before planting.	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
BLACKBERRY								
Aphids	Malathion	—	5% D 25% WP 50% EC	20-35 lb. 6 lb. 1½ pt.	On foliage.	—	Do not apply malathion while fruit is on plants.	HG 46
	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	2 pt. in S	do.	3	--	
Japanese beetle and rose chafer adults	DDT	7	5% DDT 50% WP 25% EC	20-35 lb. 3 lb. 2 qt.	On foliage.	—	Do not apply DDT while fruit is on plants.	
	Methoxychlor	14	5% D 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	do.	14	--	
Orange tortrix	TDE	7	5% D 50% WP	20-35 lb. 6 lb.	To foliage in spring when plants begin to grow.		Do not apply while fruit is on plants.	
Raspberry cane borer, red-necked cane borer	Rotenone	Exempt	0.75% D 5% powder	20-35 lb. 2½ lb. in S	On foliage just before plants begin to bloom; repeat in about 2 weeks.			
Raspberry fruitworm	Rotenone	Exempt	0.75% D	20-35 lb.	On foliage 7 days after first blossoms; repeat in 10 and 20 days.			
Redberry mite	Lime sulfur	Safe	6 gal./100 gal. water 2½ gal./100 gal. water	100 gal. 100 gal.	On dormant plants. On plants when fruit spurs are 1 ft. long.			
Rose scale	Malathion	--	5% D 25% WP 50% EC	20-35 lb. 6 lb. 1½ pt.	On foliage after harvest.		Do not apply malathion while fruit is on plants.	
	White oil	Exempt	EC	½ cup/gal. water	On dormant plants.		--	
Stink bugs	DDT	7	5% DDT 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	On foliage.		Do not apply DDT while fruit is on plants.	
	Sabadilla	Exempt	20% D	20-35 lb.	do.		--	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
BROCCOLI								
Cabbage aphid	Malathion	8	5% D 25% WP 50% EC	20-35 lb. 6 lb. 1½ pt.	On foliage when aphids first appear; repeat weekly as needed.	3	--	FB 1957
	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	2 pt. in S	do.	3	--	
	Parathion	1	2% D EC or WP	20-35 lb. ¼-½ lb. parathion	On foliage.	21	Restriction 2.	
	TEPP	0	D or EC	¼-½ lb. TEPP	do.	3	Restriction 2.	
	Demeton	0.75	EC	¼-½ lb. demeton	do.	21	do.	
Cabbage looper and other caterpillars	DDT	7	D, WP, or EC	1½ lb. DDT	On foliage every 7 days. On summer or fall plantings in South begin as soon as true leaves appear. On other plantings begin when insects appear.		Restriction 1.	FB 1957
	Rotenone	Exempt	D, EC, or powder	¼ lb. rotenone			--	
	Toxaphene	7	D, WP, or EC	2-3 lb. toxaphene			Restriction 1.	
	Malathion	8	D, EC, or WP	1¼ lb. malathion	do.	3	--	FB 2099
	Parathion	1	D, EC, or WP	½ lb. parathion	do.	21	Restriction 2.	
Cutworms (soil)	Toxaphene	7	D, WP, or EC	4 lb. toxaphene	Apply to soil surface before planting.		Restriction 1.	
			Bait: 2½ lb. 40% WP or 1¼ pt. 63% EC + 1-2 qt. light mineral oil in 25 lb. bran	30 lb.	Spread on soil (not plants) in late afternoon.		--	
Harlequin bug and stink bugs	Sabadilla	Exempt	10-20% D	25 lb.	On foliage.			HG 44
Root maggots	Chlordane	0.3	40-50% WP 72-75% EC 5% D Drench: 1½ lb. 40% WP or ½ pt. 75% EC/100 gal.	4 lb. 1 qt. 30 lb. ¾ cup/plant	To soil at base of plants when leaves first appear. On soil where plant is set.		Restriction 4.	FB 1957, HG 44

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
BRUSSELS SPROUTS								
Cabbage aphid	Malathion	8	5% D 25% WP 50% EC	20-35 lb. 6 lb. 1½ pt.	On foliage when aphids first appear; repeat weekly as long as needed.	7		HG 44
	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	2 pt. in S	do.	7		
	Parathion	1	2% D EC or WP	20-30 lb. ¼-½ lb. parathion	On foliage.	21	Restriction 2.	
	TEPP	0	D or EC	¼-½ lb. TEPP	do.	3	do.	
	Demeton	0.75	EC	¼-½ lb. demeton	do.	21	do.	
Cabbage looper and other caterpillars	DDT	7	. . . . . Same as for Broccoli				Restriction 1.	HG 44
	Toxaphene	7	do.				do.	
	Rotenone	Exempt	do.				--	
Cutworms (soil)	Toxaphene	7	do.				Restriction 1.	
Root maggots	Chlordane	0.3	do.				Restriction 4.	
CABBAGE								
Aphids	Malathion	8	5% D 25% WP 50% EC	20-35 lb. 6 lb. 1½ pt.	On foliage when aphids first appear; repeat weekly as long as needed.	7		HG 46
	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	2 pt. in S	do.	7		
	Parathion	1	2% D	20-35 lb.	On foliage.	21	Restriction 2.	
	TEPP	0	D or EC	¼-½ lb. TEPP	do.	3	do.	
	Demeton	0.75	EC	¼-½ lb. demeton	do.	21	do.	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
CABBAGE (con.)								
Caterpillars	DDT	7	D, WP, or EC	1½ lb. DDT	On foliage every 7 days. On summer or fall plantings in South begin as soon as true leaves appear. On other plantings begin when insects appear.		Restriction 7.	HG 44
	Toxaphene	7	D, WP, or EC	2 to 3 lb. toxaphene			do.	
	Rotenone	Exempt	D or S	¼ lb. rotenone				
	Malathion	8	D, WP, or EC	1½ lb. malathion	do.	7	--	FB 2099
	Parathion	1	D, WP, or EC	½ lb. parathion	do.	21	Restriction 2.	
	Endrin	0	EC or D	3-6 oz. endrin	do.	--	Do not apply after heads begin to form.	
Cutworms	Toxaphene	7	D, WP, or EC	2-3 lb. toxaphene	To soil surface. Spread on soil (not plants) in late afternoon.		Restriction 7.	FB 2099
			Bait: 2½ lb. 40% WP or 1½ pt. 63% EC + 1-2 qt. light mineral oil in 25 lb. bran	30 lb.			--	
Flea beetles	DDT	7	D, EC, or WP	1½ lb. DDT	On foliage.	--	Restriction 7.	HG 44
	Methoxychlor	14	D, EC, or WP	1½ lb. methoxychlor	do.	7	--	
	Rotenone	Exempt	D or S	¼ lb. rotenone	do.	--	--	
Harlequin bug and stink bugs	DDT	7	D, WP, or EC	1½ lb. DDT	On foliage.		Restriction 7.	
	Sabadilla	Exempt	10-20% D	25 lb.	do.		--	
Mole crickets	Chlordane	0.3	D, WP, or EC	1-2 lb. chlordane	On soil of infested field.		Restriction 4.	
			3% B	40 lb.	Scatter on soil (not plants) in late afternoon.		--	
			Drench: 4 oz. 50% WP/100 gal.	100 gal./1000 sq. ft.	To surface of seedbed before planting.		Restriction 4.	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
CABBAGE (con.)								
Root maggots	Chlordane	0.3	40-50% WP 72-75% EC 5% D Drench: 1½ lb. 50% WP or ½ pt. 75% EC/100 gal.	4 lb. 1 qt. 30 lb. ¾ cup/plant	To soil at base of plants when leaves first appear; repeat shortly after trans- planting or thinning. On soil where each transplant is set.		Restriction 4. do.	HG 44
Vegetable weevil	DDT	7	5% D 50% WP 25% EC	25 lb. 2½ lb. 2½ qt.	On foliage.		Restriction 7.	
	Rotenone	Exempt	1% D 5% EC 5% powder	25 lb. 2 qt. 5 lb. in S	do.		--	
White-fringed beetle grubs	DDT	7	D, WP, or EC	¼ lb. DDT/1000 sq. ft.	To soil surface before planting; work into top 3 in.		Restriction 7.	
	Chlordane	0.3	D, WP, or EC	1/8 lb. chlordane/ 1000 sq. ft.	do.		Do not apply to plants past seedling stage.	
Wireworms	Chlordane	0.3	D, WP, or EC	4-10 lb. chlordane	To soil surface and work into top 6-9 in.		Apply either before planting or after harvest. DDT recommended only in irrigated lands in West.	FB 1866
	DDT	7	D, WP, or EC	10 lb. DDT	do.			
CANTALOUPE. See Melons.								
CARROT								
Carrot rust fly	Chlordane	0.3	D, EC, or WP	5 lb. chlordane	To soil surface and work into top 6 in. before planting.		Do not apply to plants past seedling stage.	HG 46

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
CARROT (con.)								
Leafhoppers	DDT	7	D, WP, or EC	1½ lb. DDT	On foliage.	--	Restriction 1.	HG 46
	Methoxychlor	14	D, WP, or EC	1½ lb. methoxychlor	do.	Tops 14, roots 7		
Vegetable weevil	DDT	7	D, WP, or EC	1½ lb. DDT	On foliage.		Restriction 1.	
	Rotenone	Exempt	D, EC, or powder	¼ lb. rotenone	do.			
Wireworms	Chlordane	0.3	D, WP, or EC	5-10 lb. chlordane	To soil surface and work into top 6-9 in.		Apply either before planting or after harvest.	FB 1866
	DDT	7	D, WP, or EC	10 lb. DDT				
	Ethylene dibromide	75 (inorganic bromides)	40% soln. (3.6 lb./gal.) 85% soln. (12 lb./gal.)	10 gal. 3 gal.	Inject 8 in. deep into fallow soil every 12 in.		Do not apply within 3 weeks before planting.	
CAULIFLOWER								
Aphids	Malathion	8 Same as for Cabbage			7	--	FB 1957
	Nicotine sulfate	2 (nicotine)	do.			7	--	
	Parathion	1	do.			21	Restriction 2.	
	TEPP	0	do.			3	do.	
	Demeton	0.75	do.			21	do.	
Caterpillars	DDT	7	do.			--	Do not apply after curd begins to form.	FB 1957, FB 2099
	Toxaphene	7	do.			--		
	Rotenone	Exempt	do.			--	--	
	Malathion	8	do.			7	--	
	Parathion	1	do.			21	Restriction 2.	
Cutworms	Toxaphene	7	do.				Do not apply after curd begins to form.	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
CAULIFLOWER (con.)								
Flea beetle	DDT	7	. . . . . Same as for Cabbage			--	Do not apply DDT after curd begins to form.	HG 46
	Rotenone	Exempt	do.			--		
	Methoxychlor	14	do.			7		
Harlequin bug and stink bugs	DDT	7	do.				Do not apply DDT after curd begins to form.	
	Rotenone	Exempt	do.					
	Sabadilla	Exempt	do.					
Mole crickets	Chlordane	0.3	do.				Do not apply to plants past seedling stage.	L 237
Root maggots	Chlordane	0.3	do.				do.	HG 44 and 46
Vegetable weevil	DDT	7	do.				Do not apply DDT after curd begins to form.	
	Rotenone	Exempt	do.					
White-fringed beetle grubs	DDT	7	do.				do.	
	Chlordane	0.3	do.				Do not apply to plants past seedling stage.	
Wireworms	Chlordane	0.3	. . . . . Same as for Beets				do.	FB 1866
	Ethylene dibromide	10 (inorganic bromides)	do.				Do not apply within 3 weeks before planting.	
CELERY								
Aphids	Malathion	8	. . . . . Same as for Cabbage			7	--	
	Nicotine sulfate	2 (nicotine)	do.			7	--	
	Parathion	1	do.			21	Restriction 2.	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
CELERY (con.)								
Celery leaf tier	Pyrethrum	Exempt	0.2% D EC	20-30 lb. $\frac{1}{2}$ oz. pyrethrins	2 applications $\frac{1}{2}$ hour apart.		--	HG 46
	DDT	7	5% D 50% WP 25% EC	20-30 lb. $2\frac{1}{2}$ lb. $2\frac{1}{2}$ qt.	On foliage.		Do not apply after bunch begins to form or after stalk is half grown, whichever is earlier.	
Cutworms (soil)	DDT	7	D, WP, or EC	2 lb. DDT	To soil surface.		Do not apply on plants past the seedling stage.	
	Toxaphene	7	D, WP, or EC 3% B	2 lb. toxaphene 40 lb.	do. Spread on soil (not plants) in late afternoon.		do. --	
Lygus bugs	DDT	7	5% D 50% WP 25% EC	20-30 lb. $2\frac{1}{2}$ lb. $2\frac{1}{2}$ qt.	On foliage.		Do not apply after bunch begins to form or after stalk is half grown, whichever is earlier.	
	Pyrethrum	Exempt	0.2% D EC	20-30 lb. $\frac{1}{2}$ oz. pyrethrins	do.		--	
Spider mites	Aramite	1	3% D	20-30 lb.	On foliage.	15		HG 46
	Malathion	8	5% D 25% WP 50% EC	20-30 lb. 6 lb. $1\frac{1}{2}$ pt.	do.	7		
	Parathion	1	2% D EC or WP	20-30 lb. $\frac{1}{2}$ lb. parathion	do.	21	Restriction 2.	
CHARD. See Swiss chard.								

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
COLLARDS								
Aphids	Nicotine	2 (nicotine)	. . . . . Same as for Cabbage			7		HG 44
	Parathion	1		do.		21	Restriction 2.	
	TEPP	0		do.		3	do.	
Cabbage looper and other cater- pillars	DDT	7		do.		--	Restriction 1.	FB 2099
	Parathion	1		do.		21	Restriction 2.	
	Rotenone	Exempt		do.		--	--	
Cutworms (soil)	DDT	7		do.			Restriction 1.	HG 29
Flea beetles	DDT	7		do.		--	do.	HG 46
	Rotenone	Exempt		do.		--	--	
	Methoxychlor	14		do.		14	--	
Harlequin bug and stink bugs	DDT	7		do.			Restriction 1.	
	Rotenone	Exempt		do.			--	
	Sabadilla	Exempt		do.			--	
Mole crickets	Chlordane	0.3		do.			Restriction 4.	L 237
Root maggots	Chlordane	0.3		do.			do.	HG 44
Vegetable weevil	DDT	7		do.			Restriction 1.	
	Rotenone	Exempt		do.			--	
Wireworms	Chlordane	0.3		do.			Apply either before planting or after harvest.	
CORN. See Sweet corn.								
COWPEA. See Peas, blackeye.								

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
CUCUMBER, FIELD								
Aphids	Malathion	8	5% D 25% WP 50% EC	20-40 lb. 6 lb. 1½ pt.	On foliage.	1		HG 46
	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	2 pt. in S	do.	3		
	Parathion	1	D, EC, or WP	¼-½ lb. parathion	do.	15	Restriction 2.	
	TEPP	0	D or EC	¼-½ lb. TEPP	do.	3	do.	
Cucumber beetles	Cryolite	7 (fluorine)	50-90% D	20-40 lb. as D	do.	--	Remove excess residue by washing or brushing.	HG 46
	Methoxychlor	14	5% D 50% WP	20-40 lb. 2-4 lb.	do.	7	--	
	Rotenone	Exempt	1% D 4% powder	20-40 lb. 4 lb. in S	do.	--	--	
Leaf miners	Parathion	1	D, EC, or WP	¼-½ lb. parathion	do.	15	Restriction 2.	
Pickleworm	Cryolite	7 (fluorine)	50-90% D	20-40 lb. as D 8 lb. cryolite in S	On foliage when worms appear in blossoms; repeat.	--	Remove excess residue by washing or brushing.	
	Lindane	10	1% D 25% WP 20% EC	20-40 lb. 1 lb. 1 pt.	do.	1	Restriction 5.	
	Parathion	1	D, EC, or WP	¼-½ lb. parathion	do.	15	Restriction 2.	
	Rotenone	Exempt	1% D	20-40 lb.	do.	--	Only partly effec- tive.	
	Sabadilla	Exempt	20% D	20-40 lb.	do.	--	do.	
Spider mites	Aramite	1	3% D 15% WP	20-35 lb. 1½ lb.	On foliage.	15		HG 46
	Malathion	8	5% D 25% WP 50% EC	20-35 lb. 6 lb. 1½ pt.	do.	1		
	Parathion	1	2% D	20-35 lb.	do.	15	Restriction 2.	
Thrips	Parathion	1	2% D	30 lb.	do.	15	do.	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
CUCUMBER, GREENHOUSE								
Aphids	Nicotine	2 (nicotine)	40% nicotine soln.	2 tsp./gal. S	On foliage.	3	--	
	Malathion	8	WP or EC	1 lb. malathion/100 gal.	do.	1	--	
			10% aerosol	1 lb./50,000 cu. ft.	In closed greenhouse in air above plants. Temperature should be 70-85°F. and venti- lators closed for at least 2 hours.	1	Should be used only by a trained operator. Restriction 6.	
	Parathion	1	10% aerosol	do.	do.	15	Restrictions 2 and 6	
	TEPP	0	5% aerosol	do.	do.	3	do.	
Armyworms, cabbage looper, cutworms, earwigs, and thrips	DDT	7	3% D 50% WP	--	On foliage.	5		
	Malathion	8	. . . . . Same as for Aphids					
	Parathion	1	do.					
Cucumber beetles	DDT	7	3% D	--	On foliage.	5	--	
	Parathion	1	10% aerosol	1 lb./50,000 cu. ft.	Same as for Aphids.	15	Restrictions 2 and 6.	
	Rotenone	Exempt	1% D	--	On foliage.	--	--	
Garden centipede	Lindane	10	Drench: 5 oz. 25% WP/50 gal.	50 gal./1,000 sq. ft.	Sprinkle on soil and water it in. For newly set plants, put 1 pt. around base of each plant.		Do not use lindane for this purpose except in green- house. Restriction 5.	
Greenhouse whitefly	Malathion	8	. . . . . Same as for Aphids					
	Parathion	1	do.					
	TEPP	0	do.					
Mealybug	Malathion	8	do.					
	Parathion	1	do.					
	TEPP	0	do.					

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
CUCUMBER, GREENHOUSE (con.)								
Mushroom mite	Parathion TEPP	1 0	. . . . . Same as for Aphids do.					
Spider mites	. . . . . Same as for Greenhouse whitefly							
Thrips	. . . . . Same as for Armyworms							
EGGPLANT								
Colorado potato beetle	DDT Rotenone	7 Exempt	5% D 50% WP 25% EC 0.75% D 5% powder	20-30 lb. 3 lb. 3 pt. 20-30 lb. 2½ lb. in S	On foliage. do.	5 --		HG 46
Cutworms	DDT Toxaphene	7 7	D, WP, or EC D, WP, or EC- 3% B	2 lb. DDT 2 lb. toxaphene 40 lb.	On soil surface. do. Scatter on soil (not plants) late in afternoon.		Do not apply on plants past seedling stage. do. --	
Eggplant lace bug	Malathion	8	5% D 25% WP 50% EC	20-30 lb. 6 lb. 1½ pt.	On foliage.	3		
Flea beetles	DDT Methoxychlor Rotenone	7 14 Exempt	5% D 50% WP 25% EC 5% D 50% WP 25% EC 0.75-1% D 5% powder	20-30 lb. 3 lb. 3 pt. 20-30 lb. 3 lb. 3 pt. 20-30 lb. 2½ lb. in S	On foliage. do. do.	5 7 --		

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
EGGPLANT (con.)								
Hornworms	TDE	7	10% D 50% WP 25% EC	20-30 lb. 4 lb. 1 gal.	On foliage.	1		HG 46
Spider mites	Malathion	8	5% D 25% WP 50% EC	20-30 lb. 6 lb. 1½ pt.	do.	3		
HOPS								
Aphids and spider mites	Parathion	1	1% D	30-40 lb.	On foliage.	15	Restriction 2.	
KALE								
Aphids	Malathion	8	5% D 25% WP 50% EC	20-35 lb. 6 lb. 1½ pt.	On foliage when aphids first appear; repeat weekly if needed.	7		HG 46
	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	2 pt. in S	do.	7		
	Parathion	1	D, EC, or WP	¼-½ lb. parathion	On foliage.	21	Restriction 2.	
	TEPP	0	D or EC	¼-½ lb. TEPP	do.	3	do.	
Cabbage looper and other caterpillars	DDT	7	5% D 50% WP 25% EC	25 lb. 2½ lb. 2½ qt.	On foliage every 7 days. Begin on summer or fall plantings in South as soon as true leaves appear, and on other plantings when insects appear.		Restriction 1.	HG 44
	Rotenone	Exempt	D, EC, or WP	¼ lb. rotenone			--	
	Malathion	8	D, EC, or WP	1¼ lb. malathion	do.	7	--	FB 2099
	Parathion	1	D, EC, or WP	½ lb.	do.	21	Restriction 2.	
Cutworms (soil)	DDT	7	D, WP, or EC	2 lb. DDT	To soil surface prefer- ably before planting.		Restriction 1.	
	Toxaphene	--	D, WP, or EC Bait: Same as for Cabbage.	2 lb. toxaphene 30 lb.	do. Spread on soil (not plants) in late afternoon.		do. --	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
KALE (con.)								
Flea beetles	DDT	7	5% D 50% WP 25% EC	25 lb. 2½ lb. 2½ qt.	On foliage.	--	Restriction 1.	HG 44
	Methoxychlor	14	5% D 50% WP 25% EC	25 lb. 3 lb. 3 pt.	do.	14	--	
	Rotenone	Exempt	1% D 5% EC 5% powder	25 lb. 2 qt. 5 lb. in S	do.	--	--	
Harlequin bug and stink bugs	DDT	7	5% D 50% WP 25% EC	25 lb. 2½ lb. 2½ qt.	do.		Restriction 1.	
	Rotenone	Exempt	1% D 5% EC 5% powder	25 lb. 2 qt. 5 lb. in S	do.		--	
	Sabadilla	Exempt	10-20% D	25 lb.	do.		--	
Mole crickets	Chlordane	0.3	D, WP, or EC 3% B	1-2 lb. chlordane 40 lb.	On soil. Scatter on soil.		Restriction 4. --	
			Drench: 4 oz. 50% WP/100 gal.	100 gal./1,000 sq. ft.	To soil surface in seedbed preferably before planting.		Restriction 4.	
Root maggots	Chlordane	0.3	40-50% WP 72-75% EC 5% D	4 lb. 1 qt. 30 lb.	To soil at base of plants when leaves first appear; repeat shortly after trans- planting or thinning.		Restriction 4.	
			Drench: 1½ lb. 40-50% WP or ½ pt. 72-75% EC	¾ cup/plant	On soil where each transplant is set.			
Vegetable weevil	DDT	7	5% D 50% WP 25% EC	25 lb. 2½ lb. 2½ qt.	On foliage.		Restriction 1.	
	Rotenone	Exempt	1% D 5% EC 5% powder	25 lb. 2 qt. 5 lb. in S	do.		--	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
KALE (con.)								
White-fringed beetle grubs	Chlordane	0.3	D, WP, or EC	1/8 lb. chlordane/ 1,000 sq. ft.	To soil surface before planting. Work into top 3 in.		Restriction 4.	HG 44
	DDT	7	D, WP, or EC	1/4 lb. DDT/1,000 sq. ft.	do.		Restriction 1.	
Wireworms	Chlordane	0.3	D, WP, or EC	4-10 lb. chlordane	To soil surface and work into top 6-9 in. before planting or after harvest.		Restriction 4.	
KOHLRABI								
Aphids	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	2 pt. in S	On foliage when aphids first appear; repeat weekly as long as needed.	7	--	
	Parathion	1	2% D EC or WP	20-35 lb. 1/4-1/2 lb. parathion	On foliage.	21	Restriction 2.	
Caterpillars	DDT	7	5% D 50% WP 25% EC	25 lb. 2 1/2 lb. 2 1/2 qt.	do.		Restriction 1.	HG 44 and 46
	Rotenone	Exempt	1% D 5% EC 5% powder	25 lb. 2 qt. 5 lb. in S	do.		--	
	Toxaphene	7	10-15% D 40% WP 63% EC	25 lb. 6-9 lb. 3-5 pt.	do.		Restriction 1.	
Cutworms (soil)	DDT	7	. . . . . Same as for Kale				do.	
	Toxaphene	7	do.				do.	
Flea beetles	DDT	7		do.		--	Restriction 1.	
	Methoxychlor	14		do.		7	--	
	Rotenone	Exempt		do.		--	--	
Root maggots	Chlordane	0.3		do.			Restriction 4.	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
LETTUCE, FIELD								
Aphids	Demeton	0.75	EC	$\frac{1}{4}$ - $\frac{1}{2}$ lb. demeton	On foliage.	21	Restriction 2.	
	Malathion	8	D, EC, or WP	$1\frac{1}{4}$ lb. malathion	do.	Head 7, leaf 10	—	
	Parathion	1	D, EC, or WP	$\frac{1}{2}$ lb. parathion	do.	21	Restriction 2.	
Cabbage looper, armyworms, and cutworms in South- west	Toxaphene + DDT	7	15% toxaphene + 5% DDT	20-30 lb.	do.		Restrictions 1 and 7.	Ariz. Ext. Cir. 219
Caterpillars	DDT	7	D, WP, or EC	$1\frac{1}{4}$ lb. DDT	do.		Restrictions 1 and 7.	HG 46, Ariz. Ext. Cir. 219
	Toxaphene	7	D, WP, or EC	3-4 $\frac{1}{2}$ lb. toxaphene	do.		do.	
	Rotenone	Exempt	1% D 5% powder	20-30 lb. 4 $\frac{1}{2}$ lb. in S	do.		—	
Leafhoppers	DDT	7	D, EC, or WP	$1\frac{1}{4}$ lb. DDT	On foliage.	—	Restrictions 1 and 7.	HG 46
	Malathion	8	D, EC, or WP	$1\frac{1}{4}$ lb. malathion	do.	Head 7, leaf 10	—	
	Methoxychlor	14	D, EC, or WP	$1\frac{1}{4}$ lb. methoxychlor	do.	14	—	
Mole crickets	Chlordane	0.3	. . . . . Same as for Kale				Restriction 4.	L 237
Wireworms	Chlordane	0.3	do.				Apply either before planting or after harvest.	FB 1866
LETTUCE, GREENHOUSE								
Aphids	Malathion	8	WP or EC	1 lb. malathion/ 100 gal.	On foliage.	Head 7, leaf 10	—	
			10% aerosol	1 lb./50,000 cu. ft.	Apply aerosols in closed greenhouse in air above plants.	do.	Restriction 6.	
	Parathion	1	10% aerosol	do.	Temperature should be 70-85°F. and venti- lators closed for at least 2 hours.	21	Restrictions 2 and 6.	
	TEPP	0	5% aerosol	do.		3	do.	
	Nicotine sulfate (nicotine)	2	40% nicotine soln.	2 tsp./gal.	On foliage.	7	—	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
LETTUCE GREENHOUSE (con.)								
Armyworms, cabbage looper, and cutworms	DDT	7	3% D	--	On foliage.	--	Restrictions 1 and 7.	
	Malathion	8	WP or EC 10% aerosol	1 lb. malathion 1 lb./50,000 cu. ft.	do. Same as for Aphids.	Head 7, leaf 10	Restriction 6.	
	Parathion	1	10%	1 lb./50,000 cu. ft.	do.	21	Restrictions 2 and 6.	
Greenhouse whitefly	Malathion	8	WP or EC 10% aerosol	1 lb. malathion 1 lb./50,000 cu. ft.	On foliage. Same as for Aphids.	Head 7, leaf 10	-- Restriction 6.	
	Parathion	1	10% aerosol	do.	do.	21	Restrictions 2 and 6.	
	TEPP	0	5% aerosol	do.	do.	3	do.	
Sowbugs	DDT	7	3% D	--	On soil and in hiding places.	--	Restrictions 1 and 7.	
	Parathion	1	10% aerosol	1 lb./50,000 cu. ft.	Same as for Aphids.	21	Restrictions 2 and 6.	
LOGANBERRY								
Aphids	Malathion	--	5% D 25% WP 50% EC	20-35 lb. 6 lb. 1½ pt.	On foliage.	--	Do not apply while fruit is on plants.	HG 46
	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	2 pt. in S	do.	3	--	
Japanese beetle adults and rose chafer	DDT	7	5% DDT 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	do.	--	Do not apply while fruit is on plants.	
	Methoxychlor	14	5% D 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	do.	14	--	
Orange tortrix	TDE	7	5% D 50% WP	20-35 lb. 6 lb.	On foliage in spring when plants begin to grow.		Do not apply while fruit is on plants.	
Raspberry cane borer	Rotenone	Exempt	0.75% D 5% powder	30-35 lb. 2½ lb. in S	On foliage just before plants begin to bloom; repeat in 2 weeks.			

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
LOGANBERRY (con.)								
Raspberry fruitworm	Rotenone	Exempt	0.75% D 5% powder	20-35 lb. 2½ lb. in S	On foliage 7 days after first blossoms; repeat in 10 and 20 days.			HG 46
Rose chafer. See Japanese beetle.								
Rose scale	Malathion	--	5% D 25% WP 50% EC	20-35 lb. 6 lb. 1½ pt.	On foliage after harvest.		Do not apply while fruit is on plants.	
	White oil	Exempt	EC	½ cup/gal. water	On dormant plants.		--	
Stink bugs	DDT	7	5% DDT 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	On foliage.		Do not apply while fruit is on plants.	
	Sabadilla	Exempt	20% D	20-35 lb.	do.		--	
MELONS								
Aphids	Malathion	8	5% D 25% WP 50% EC	20-40 lb. 6 lb. 1½ pt.	On foliage.	1	--	L 389
	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	2 pt. in S	do.	3	--	
	Parathion	1	2% D EC or WP	15-30 lb. 1/3 lb. parathion	do.	15	Restriction 2.	
Cucumber beetles	Cryolite	7 (fluorine)	50-90% D	20-40 lb. as D 6 lb. cryolite in S	do.	--	--	
	Dieldrin	0	D, EC, or WP	½ lb. dieldrin	do.	--	Do not apply after blooming begins.	
	Methoxychlor	14	5% D 50% WP	20-40 lb. 3 lb.	do.	7	--	
	Parathion	1	D, EC, or WP	¼-½ lb. parathion	do.	15	Restriction 2.	
	Rotenone	Exempt	1% D 4% powder	20-40 lb. 4 lb. in S	do.	--	--	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
MELONS (con.)								
Leafhoppers	Parathion	1	2% D EC or WP	15-30 lb. 1/3 lb. parathion	On foliage.	15	Restriction 2.	L 389
Leaf miners and thrips	Parathion	1	D, EC, or WP	1-1/2 lb. parathion	do.	15	do.	
Pickleworm	Lindane	10	D or EC	1/4 lb. lindane	do.	1	Restriction 5.	FB 1468
	Parathion	1	D, EC, or WP	1/4 lb. parathion	do.	15	Restriction 2.	
	Cryolite	7 (fluorine)	50-90% D	20-40 lb. as D 6 lb. cyrolite in S	do.	--	Only partly effective.	
	Rotenone	Exempt	1% D 4% powder	20-40 lb. 4 lb. in S	do.	--	do.	
Spider mites	Aramite	1	D or WP	1/2 lb. Aramite	do.	15	--	L 389
	Malathion	8	5% D 25% WP 50% EC	20-40 lb. 6 lb. 1 1/2 pt.	do.	1	--	
	Ovex	--	7.5% D	15-30 lb.	do.	--	Do not apply just before harvest.	
	Parathion	1	D, EC, or WP	1-1/2 lb. parathion	do.	15	Restriction 2.	
MINT								
Flea beetles On crop for distillation only	Cryolite	--	50% D	25-30 lb.	On foliage.		Do not feed spent hay from treated crop to livestock.	FB 1988
	DDT	--	5% D	25-30 lb.	do.		do.	
On crop for market or home use	Rotenone	Exempt	1% D	25-30 lb.	do.		--	
MUSKMELON. See Melons.								

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
MUSTARD								
Aphids	Parathion	1	D, EC, or WP	$\frac{1}{4}$ - $\frac{1}{2}$ lb. parathion	On foliage as soon as plants appear; repeat weekly.	21	Restriction 2.	
	Malathion	8	D, EC, or WP	1 $\frac{1}{4}$ lb. malathion	do.	7		HG 46
	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	2 pt. in S	do.	7		
	Rotenone	Exempt	1% D 5% EC 5% powder	20-35 lb. 2 qt. 5 lb. in S	do.	--		
Caterpillars and flea beetles	Malathion	8	D, EC, or WP	1 $\frac{1}{4}$ lb. malathion	On foliage every 7 days. Begin on fall plantings in South as soon as plants are up; on other plantings when insects appear.	7	--	
	Parathion	1	D, EC, or WP	$\frac{1}{2}$ lb. parathion	do.	21	Restriction 2.	
	Rotenone	Exempt	1% D 5% EC 5% powder	20-35 lb. 2 qt. 5 lb. in S	do.	--	--	
	Toxaphene	--	10-15% D 10% WP 63% EC	20-35 lb. 6-9 lb. 3-5 pt.	do.	--	Restriction 1.	
Harlequin bug	Rotenone	Exempt	1% D 5% EC 5% powder	20-35 lb. 2 qt. 5 lb. in S	On foliage.		Only partly effective.	
	Sabadilla	Exempt	20% D	20-35 lb.	do.		--	
Vegetable weevil	Rotenone	Exempt	1% D 5% EC 5% powder	20-35 lb. 2 qt. 5 lb. in S	do.			

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
OKRA								
Aphids	Malathion	--	5% D 25% WP 50% EC	20-35 lb. 6 lb. 1½ pt.	On foliage.	--	Do not apply while pods are on plants.	HG 46 and L 305
	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	2 pt. in S	do.	3	--	
Blister beetles and corn earworm	Cryolite	7 (fluorine)	50-90% D	20-35 lb. as D 12 lb. cryolite in S	do.		Do not apply while pods are on plants.	
	DDT	7	5% D 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	do.		do.	
Cucumber beetles and flea beetles	DDT	7	5% D 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	do.		do.	
	Rotenone	Exempt	1% D 0.025% spray	20-35 lb. --	do.		--	
Japanese beetle	DDT	7	5% D 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	do.		Do not apply while pods are on plants.	
	Methoxychlor	--	5% D 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	do.		do.	
Stink bugs	DDT	7	5% D 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	do.		do.	
	Sabadilla	Exempt	20% D	20-35 lb.	do.		--	
ONIONS								
Onion maggot	Dieldrin	0.1	WP slurry	½ lb. toxicant/100 lb. seed	To seed in slurry with thiram.		Apply before planting.	
	Heptachlor	0.1	WP slurry	do.	do.		do.	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
ONIONS (con.)								
Thrips	DDT	7	10% D EC or WP	30 lb. 1½ lb. DDT	On foliage of bulb crop every 10-14 days. On seed crop apply when seed heads start to appear; repeat every 7 days.	—	Do not apply on plants to be harvested as green or spring onions.	L 372
	Dieldrin	0.1	D, EC, or WP	½ lb. dieldrin	do.	14	do.	
	Heptachlor	0.1	D, EC, or WP	½ lb. heptachlor	do.	5	do.	
	Toxaphene	7	20% D EC or WP	30 lb. 2 lb. toxaphene	do.	—	do.	
	Parathion	1	2% D EC or WP	30 lb. ¼ lb. parathion	do.	21	Restriction 2.	
	Malathion	8	5% D EC or WP	30 lb. ¾ lb. malathion	do.	3	—	
Wireworms	Chlordane	0.3	D, WP, or EC	4-10 lb. chlordane	To soil surface every 2-5 years and work into top 6-9 in.		Apply either before planting or after harvest. DDT recommended only in irrigated lands in West.	FB 1866
	DDT	7	D, WP, or EC	10 lb. DDT	do.			
	Ethylene dibromide	—	40% soln. (3.6 lb./gal.) 85% soln. (12 lb./gal.)	10 gal. 3 gal.	Inject 8 in. into fallow soil every 12 in.		Do not apply within 3 weeks before planting.	
PEAS, BLACK EYE								
Aphids	Malathion	8	5% D 25% WP 50% EC	20-35 lb. 6 lb. 1½ pt.	On foliage.	3	This usage applies to blackeye peas as a vegetable only, not as a forage crop.	HG 46
Cowpea curculio	Methoxychlor	14	5% D 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	do.	7	do.	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
PEAS, GARDEN								
Aphids	DDT	7	D or EC	1-2 lb. DDT	On foliage.	—	Do not apply DDT to varieties of peas with edible pods after pods form, or plants to be fed to dairy animals or animals being finished for slaughter.	FB 1945
	Malathion	8	D, WP, or EC	1-1½ lb. malathion	do.	3	--	
	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	2 pt. in S	do.	3	--	
	Parathion	1	D, EC, or WP	1/3-½ lb. parathion	do.	10	Restriction 2.	
	Rotenone	Exempt	1% D	35 lb.	do.	--	--	
Pea moth	Parathion	1	1% D EC or WP	25-35 lb. 1/3-½ lb. parathion	do.	10	Restriction 2.	
Pea weevil	DDT	7	5% D	20-25 lb.	To foliage during early bloom period before weevil eggs are laid.	--	Same as for Aphids.	FB 1971
	Malathion	8	D or EC	1-1½ lb. malathion	do.	3	--	
	Methoxychlor	14	5% D	20-25 lb.	do.	7	--	
	Parathion	1	1% D EC or WP	25-35 lb. 1/3-½ lb. parathion	do.	10	Restriction 2.	
PEPPERS								
Aphids	Malathion	8	5% D 25% WP 50% EC	15-30 lb. 6 lb. 1½ pt.	On foliage.	3	--	FB 2051
	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	2 pt. in S	do.	3	--	
	Parathion	1	1% D 25% EC	15-30 lb. 1 pt.	do.	15	Restriction 2.	
	Rotenone	Exempt	1% D 5% powder	15-30 lb. 3 lb. in S	do.	--	--	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
PEPPERS (con.)								
Cutworms (soil)	DDT	7	D, WP, or EC	2 lb. DDT	To soil surface.	5	Wash peppers as directed in L 226.	HG 29
	Toxaphene	7	D, WP, or EC 3% B	2 lb. toxaphene 40 lb.	do. Spread on soil (not plants) in late afternoon.	5 --	do. --	
Flea beetles	DDT	7	5% D 50% WP	15-30 lb. 2½ lb.	On foliage.	5	Wash peppers as directed in FB 2051.	FB 2051
	Methoxychlor	14	5% D 50% WP 25% EC	15-30 lb. 3 lb. 3 pt.	do.	7	--	
	Parathion	1	1% D 15% EC	15-30 lb. 1 pt.	do.	15	Restriction 2.	
	Rotenone	Exempt	1% D 5% powder	15-30 lb. 3 lb. in S	do.	--	--	
Hornworms	TDE	7	10% D 50% WP 25% EC	15-30 lb. 4 lb. 1 gal.	do.	1	Wash peppers as directed in FB 2051.	
Leaf miners	Parathion	1	1% D	15-30 lb.	do.	15	Restriction 2.	
Pepper maggot	Parathion	1	1% D 15% EC	15-30 lb. 1 pt.	do.	15	Restriction 2.	
	Rotenone	Exempt	1% D 5% powder	15-30 lb. 3 lb. in S	do.	--	--	
Pepper weevil	DDT	7	10% D 50% WP	15-30 lb. 2½ lb.	To infested foliage every 7-10 days.	5	Wash peppers as directed in L 226.	L 226
POTATO								
Aphids	DDT	--	5% D 25% EC 50% WP	20-35 lb. 2½-3 pt. 2-5 lb.	On foliage.	--	--	FB 2040, FB 2098
	Malathion	8	5% D 50% EC 25% WP	20-35 lb. 1½-2 pt. 3-5 lb.	do.	3	--	

Aphids continued on page 45.

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
POTATO (con.)								
Aphids (con.)	Nicotine sulfate	--	40% nicotine soln.	1½-2 pt. in S	On foliage.	--	--	FB 2040, FB 2098
	Parathion	--	1% D EC or WP	20-35 lb. ½ lb. parathion	do.	5	Restriction 2.	
	Rotenone	Exempt	0.75-1% D 5% EC 5% powder	20-35 lb. 1½-2 qt. 4-5 lb. in S	do.	--	--	
Armyworms	DDT	--	D, WP, or EC	1½-2 lb. DDT	To nearby infested vegetation before worms reach potato fields.		Restriction 1.	FB 2040
	Toxaphene	--	D, WP, or EC	1½-2 lb. toxaphene				
Blister beetles	Cryolite	--	50-90% D	20-35 lb. as D 8-12 lb. cryolite in S	Dust or spray beetles.			
	DDT	--	D, WP, or EC	1½-2 lb. DDT	do.			
	Methoxychlor	--	5% D 50% WP 25% EC	20-30 lb. 3 lb. 3 pt.	do.			
	Toxaphene	--	D, WP, or EC	2-3 lb. toxaphene	do.			
Colorado potato beetle and flea beetle adults	Calcium arsenate	--	Powder 25% D in lime or talc	5 lb. in S 20-35 lb.	On foliage.			FB 1958, 2034, 2040, and 2098
	Cryolite	--	50-90% D	20-35 lb. as D 8-12 lb. cryolite in S	do.			
	DDT	--	5% D 25% EC 50% WP	20-35 lb. 2½-3 pt. 2-5 lb.	do.			
	Dieldrin	0.1	D, EC, or WP	1/2-3/4 lb. dieldrin	do.			
	Heptachlor	0.1	D, EC, or WP	1/2-3/4 lb. heptachlor	do.			
	Paris green	--	10% D in lime Powder	20-35 lb. 4 lb. paris green	do.			
	Rotenone	Exempt	0.75-1% D 5% EC 5% powder	20-35 lb. 1½-2 qt. 4-5 lb. in S	do.			

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
POTATO (con.)								
Cutworms	DDT	--	D, EC, or WP	2 lb. DDT	To soil surface.			HG 29
	Toxaphene	--	D, EC, or WP 3% B	2 lb. toxaphene 40 lb.	do. Spread on soil (not plants) in late afternoon.			
European corn borer. See Plant bugs.								
Flea beetle adults. See Colorado potato beetle.								
Flea beetle larvae	Aldrin	0.1	D, G, WP, or EC	2-3 lb. aldrin	To soil surface before planting.			FB 2098
	Chlordane	0.3	D, G, WP, or EC	4-8 lb. chlordane	do.			
	Dieldrin	0.1	D, G, WP, or EC	2 lb. dieldrin	do.			
	Heptachlor	0.1	D, G, WP, or EC	2-3 lb. heptachlor	do.			
Grasshoppers	Toxaphene	--	D WP or EC	2½ lb. toxaphene 1½ lb. toxaphene	To foliage in and around potato field as needed.		Restriction 1.	FB 2040
Leafhoppers	DDT	--	5% D 25% EC 50% WP	20-35 lb. 2½-3 pt. 2-5 lb.	On foliage.	--	--	FB 2098
	Malathion	8	5% D 50% EC 25% WP	20-35 lb. 1½-2 pt. 3-5 lb.	do.	3	--	
	Methoxychlor	--	5% D 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	do.	--	--	
	Parathion	--	1% D EC or WP	20-35 lb. ½ lb. parathion	do.	5	Restriction 2.	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
POTATO (con.)								
Mole crickets	Aldrin	0.1	D, WP, EC, or B	1-2 lb. aldrin	On soil surface preferably before planting.			FB 2098
	Chlordane	0.3	D, WP, EC, or B	1-2 lb. chlordane	do.			
	Dieldrin	0.1	D, WP, EC, or B	1-2 lb. dieldrin	do.			
	Heptachlor	0.1	D, WP, EC, or B	1-2 lb. heptachlor	do.			
Plant bugs, potato tuberworm, and European corn borer	DDT	--	5% D 25% EC 50% WP	20-35 lb. 2½-3 pt. 2-5 lb.				
Potato psyllid	DDT	--	5% D 50% WP	20-35 lb. 2 lb.	To foliage of infested fields when plants are 6 in. high; repeat 3 or 4 times at 2-week intervals.			FB 2034
Potato tuberworm. See Plant bugs.								
Vegetable weevil (on foliage)	Aldrin	0.1	D, WP, or EC	¾ lb. aldrin	On foliage.	--	--	FB 2098
	DDT	--	5% D 25% EC 50% WP	20-35 lb. 2½-3 pt. 2-5 lb.	do.	--	--	
	Parathion	--	1% D EC or WP	20-35 lb. ½ lb. parathion in S	do.	5	Restriction 2.	
White-fringed beetle grubs	Aldrin	0.1	D, G, WP, or EC	2-3 lb. aldrin	To soil surface before planting. Work into top 3-4 in.			
	Chlordane	0.3	D, G, WP, or EC	4-6 lb. chlordane	do.			
	DDT	--	D, G, WP, or EC	10 lb. DDT	do.			
	Dieldrin	0.1	D, G, WP, or EC	2 lb. dieldrin	do.			
	Heptachlor	0.1	D, G, WP, or EC	2-3 lb. heptachlor	do.			

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
POTATO (con.)								
White grubs	Aldrin	0.1	D, G, WP, or EC	2-3 lb. aldrin	To soil surface before planting. Work into top 3-4 in.			FB 2098
	Chlordane	0.3	D, G, WP, or EC	10 lb. chlordane	do.			
	Dieldrin	0.1	D, G, WP, or EC	2 lb. dieldrin	do.			
	Heptachlor	0.1	D, G, WP, or EC	2-3 lb. heptachlor	do.			
Wireworms	Aldrin	0.1	D, G, WP, or EC	2-3 lb. aldrin	To soil surface and work into top 6-9 in.			FB 1866, FB 2098
	Chlordane	0.3	D, G, WP, or EC	4-10 lb. chlordane				
	DDT	--	D, WP, or EC	10-20 lb. DDT				
	Dieldrin	0.1	D, G, WP, or EC	2-3 lb. dieldrin				
	Heptachlor	0.1	D, G, WP, or EC	2-3 lb. heptachlor				
	Ethylene dibromide	--	40% soln. (3.6 lb./gal.) 85% soln. (12 lb./gal.)	10 gal. 3 gal.	Inject 8 in. into fallow soil every 12 in.		Do not apply within 3 weeks before planting.	
PUMPKIN								
Aphids	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	1½ pt. in S	On foliage.	3	--	FB 2086
	Parathion	1	1% D 15% WP	20-40 lb. 1 lb.	do.	15	Restriction 2.	
	TEPP	0	1% D 40% EC	20-40 lb. ½ pt.	do.	3	do.	
Cucumber beetles	Cryolite	7 (fluorine)	50-90% D	20-40 lb. as D 6 lb. cryolite in S	do.	--	Remove excess residues by washing or brushing.	
	Methoxychlor	14	5% D 50% WP	20-40 lb. 3 lb.	do.	7	do.	
	Rotenone	Exempt	1% D 4% powder	20-40 lb. 4 lb. in S	do.	--	--	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
PUMPKIN (con.)								
Cutworms	DDT	7	D, WP, or EC	2 lb. DDT	Apply on soil surface.		Do not apply after plants come up.	FB 2086
	Toxaphene	—	D, WP, or EC 3% B	2 lb. toxaphene 40 lb.	do. Scatter on soil (not plants) late in afternoon.		do. Do not apply on plants.	
Squash bug	DDT	7	5% D	—	To bugs on soil and under trap boards.	5	Do not apply on plants.	HG 46
	Nicotine sulfate	2 (nicotine)	40% nicotine	1½ pt.	On foliage.	3	Only partly effec- tive.	FB 2086
	Sabadilla	Exempt	20% D	20-40 lb.	do.	—	—	
Squash vine borer	Lindane	10	1% D 25% WP	20-30 lb. 1 lb.	Once or twice a week to stems and vines at base of plants.	1	Restriction 5.	FB 2086
	Methoxychlor	14	5% D 50% WP	20-40 lb. 3 lb.	do.	7	Only partly effec- tive.	
	Rotenone	Exempt	1% D 4% powder	20-40 lb. 4 lb.	do.	—	do.	
RADISH								
Root maggots	Chlordane	0.3	5% D 45% EC 50% WP	1½ oz./50 ft. row 3 tsp./gal./200 ft. row 1½ level tbsp./gal./ 200 ft. row	To soil around plants when first leaves appear; repeat shortly after thinning	—	Do not apply on plants past seedling stage.	HG 46
RASPBERRY								
Aphids	Malathion	—	5% D 25% WP 50% EC	20-35 lb. 6 lb. 1½ pt.	On foliage.	—	Do not apply malathion while fruit is on plants.	HG 46
	Nicotine sulfate	2 (nicotine)	40% nicotine	2 pt. in S	do.	3		

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
RASPBERRY (con.)								
Japanese beetle and rose chafer adults	DDT	7	5% D 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	On foliage.	—	Do not apply DDT while fruit is on plants.	HG 46
	Methoxychlor	14	5% D 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	do.	14		
Orange tortrix	TDE	7	5% D 50% WP	20-35 lb. 6 lb.	To foliage in spring when plants begin to grow.		Do not apply while fruit is on plants.	
Raspberry and red- necked cane borers	Rotenone	Exempt	0.75% D	20-35 lb.	On foliage just before plants begin to bloom; repeat in about 2 weeks.			
Raspberry fruit- worm	Rotenone	Exempt	0.75% D	20-35 lb.	On foliage 7 days after first blossoms; repeat in 10 and 20 days.			
Rose chafer. See Japanese beetle.								
Rose scale	Malathion	—	5% D 25% WP 50% EC	20-35 lb. 6 lb. 1½ pt.	On foliage after harvest.		Do not apply malathion while fruit is on plants.	
	White oil	Exempt	EC	½ cup/gal. water	On dormant plants.			
Stink bugs	DDT	7	5% DDT 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	On foliage.		Do not apply DDT while fruit is on plants.	
	Sabadilla	Exempt	20% D	20-35 lb.	do.			
RUTABAGA								
Aphids	Malathion	8	5% D 25% WP 50% EC	20-35 lb. 6 lb. 1½ pt.	On foliage when aphids first appear; repeat weekly as long as needed.	7		HG 46

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
RUTABAGA (con.)								
Aphids (con.)	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	2 pt.	On foliage when aphids first appear; repeat weekly as long as needed.	3		HG 46
	Parathion	1	2% D EC or WP	20-35 lb. $\frac{1}{2}$ lb. parathion	On foliage.	21	Restriction 2.	
Cabbage looper and other caterpillars	DDT	7	5% D 50% WP 25% EC	25 lb. $2\frac{1}{2}$ lb. $2\frac{1}{2}$ qt.	do.		Restriction 1.	HG 46
	Rotenone	Exempt	1% D 5% EC 5% powder	25 lb. 2 qt. 5 lb. in S	do.		--	
Cutworms	DDT	7	D, WP, or EC	2 lb. DDT	To soil surface.		Restriction 1.	
	Toxaphene	7	D, WP, or EC	2 lb. toxaphene	do.			
Flea beetles	DDT	7	5% D 50% WP 25% EC	25 lb. $2\frac{1}{2}$ lb. $2\frac{1}{2}$ qt.	On foliage.	--	do.	
	Methoxychlor	14	5% D 50% WP 25% EC	25 lb. 3 lb. 3 pt.	do.	7	--	
	Rotenone	Exempt	1% D 5% EC 5% powder	25 lb. 2 qt. 5 lb. in S	do.	--	--	
Root maggots	Chlordane	0.3	5% D 45% EC 50% WP	20 lb. $2\frac{1}{2}$ pt. $2\frac{1}{2}$ lb.	Dust or spray plants as soon as they appear; repeat shortly after thinning.		Restriction 4.	
Wireworms	Chlordane	0.3	D, WP, or EC	4-10 lb. chlordane	To soil surface and work into top 6-9 in.		Apply either before planting or after harvest.	FB 1866
	DDT	7	D, WP, or EC	10 lb. DDT	do.		DDT recommended only in irrigated lands in West.	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
SOYBEAN, EDIBLE (not as a forage crop)								
Mexican bean beetle	Malathion	—	5% D 25% WP 50% EC	20-35 lb. 6 lb. 1½ pt.	On foliage.	3		FB 1624
	Methoxychlor	—	5% D 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	do.	7		
	Rotenone	Exempt	1% D 5% powder	20-35 lb. 2½ lb. in S	do.	—		
Velvetbean caterpillar	Methoxychlor	—	5% D 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	do.	7		L 348
SPINACH								
Alfalfa looper	DDT	7	5% D	20-35 lb.	On foliage.		Restriction 1.	
Aphids	Parathion	1	1% D WP or EC	20-35 lb. ¼ lb. parathion	do.	21	Restriction 2.	
	Malathion	8	5% D 25% WP 50% EC	20-35 lb. 6 lb. 1½ pt.	do.	7		HG 46
	Nicotine sulfate	2 (nicotine)	40% nicotine, soln.	2 pt. in S	do.	7		
	Rotenone	Exempt	1% D 5% EC 5% powder	20-35 lb. 2 qt. 5 lb. in S	do.	—		
Beet webworm	Pyrethrum	Exempt	0.2% D EC	20-30 lb. ½ oz. pyrethrins	do.			
Leaf miner	Parathion	1	D, WP, or EC	¼-½ lb. parathion	do.	21	Restriction 2.	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
SQUASH								
Aphids	Malathion	8	5% D 25% WP 50% EC	20-40 lb. 4 lb. 1½ pt.	On foliage.	1	--	FB 2086
	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	1½ pt. in S	do.	3	--	
	Parathion	1	1% D 15% WP	20-40 lb. 1 lb.	do.	15	Restriction 2.	
	TEPP	0	1% D 40% EC	20-40 lb. ½ pt.	do.	3	do.	
Cucumber beetles	Cryolite	7 (fluorine)	50-90% D	20-40 lb. in D 6 lb. cryolite in S	On foliage.	--	Remove excess residue by washing or brushing.	
	Methoxychlor	14	5% D 50% WP	20-40 lb. 3 lb.	do.	7	do.	
	Rotenone	Exempt	1% D 4% powder	20-40 lb. 4 lb. in S	do.	--	--	
Cutworms	DDT	7	D, WP, or EC	2 lb. DDT	On soil surface, not plants.		Do not apply after plants come up.	
	Toxaphene	--	D, WP, or EC 3% B	2 lb. toxaphene 40 lb.	do. Scatter on soil (not plants) late in afternoon.		do. --	
Pickleworm	Cryolite	7 (fluorine)	50-90% D	20-40 lb. as D 8 lb. cryolite in S	On foliage when worms appear in blossoms; repeat weekly.	--	Remove excess residue by washing or wiping.	
	Lindane	10	1% D 25% WP 20% EC	20-30 lb. 1 lb. 1 pt.	do.	1	Restriction 5.	
	Rotenone	Exempt	1% D	20-40 lb.	do.	--	Only partly effective.	
	Sabadilla	Exempt	20% D	20-40 lb.	do.	--	do.	
Squash bug	DDT	7	5% D	--	To bugs on soil and under trap boards.	5	Do not apply on plants.	HG 46
	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	1½ pt. in S	On foliage.	3	Only partly effec- tive.	FB 2086
	Sabadilla	Exempt	20% D	20-40 lb.	do.	--	--	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
SQUASH (con.)								
Squash vine borer	Lindane	10	1% D	20-30 lb.	To stems and vines at base of plants at weekly intervals.	1	Restriction 5.	FB 2086
	Methoxychlor	14	5% D 50% WP	20-40 lb. 3 lb.	do.	7	Only partly effective.	
	Rotenone	Exempt	1% D 4% powder	20-40 lb. 4 lb. in S	do.	--	do.	
STRAWBERRY								
Ants	Chlordane	0.3	Drench: 4 oz. 50% WP or 3 fl. oz. 45% EC/100 gal.	100 gal./1,000 sq. ft.	Drench infested soil.		Do not apply while fruit is on plants.	HG 28, 46
Aphids	Malathion	8	5% D 25% WP 50% EC	20-35 lb. 6 lb. 1½ pt.	On foliage.	3		HG 46
	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	2 pt. in S	do.	3		
	Demeton	0.75	EC (2 lb./gal.)	1½ pt.	do.	21	Restriction 2.	
	Parathion	1	D, EC, or WP	½ lb. parathion	do.	14	do.	
	TEPP	0	D or EC	½ lb. TEPP	do.	3	do.	
Earwigs	Chlordane	0.3	5% D 50% WP 45% EC	20-35 lb. 3 lb. 3 pt.	To infested soil in and adjacent to planting.	--	Do not apply while fruit is on plants.	HG 46
Flea beetles	DDT	7	5% D 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	On foliage.	--	Do not apply while fruit is on plants.	
	Methoxychlor	14	5% D 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	do.	7	--	
	Rotenone	Exempt	0.75-1% D 5% powder	20-35 lb. 2½ lb. in S	do.	--	--	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References	
						Min. days from last application to harvest or feeding	Other		
STRAWBERRY (con.)									
Mole crickets	Chlordane	0.3	3% B D, WP, or EC	40 lb. 4 lb. chlordane	On soil. do.		-- Do not apply while fruit is on plants.	HG 46	
Spider mites	Aramite	1	3% D 15% WP	20-35 lb. 1½ lb.	On foliage.	7			
	Malathion	8	5% D 25% WP 50% EC	20-35 lb. 6 lb. 1½ pt.	do.	3			
Spittlebugs	Methoxychlor	14 Same as for Flea beetles						
	Rotenone	Exempt	do.						
Strawberry leaf beetle	Methoxychlor	14	do.						
	Rotenone	Exempt	do.						
Strawberry root weevil	Aldrin	0.1	D, WP, or EC	5 lb. aldrin	To soil surface and work into top 6-8 in. before planting.		Do not apply while fruit is on plants.		
	Chlordane	0.3	D, WP, or EC	10 lb. chlordane					
	Dieldrin	0.1	D, WP, or EC	4 lb. dieldrin					
	Heptachlor	--	D, WP, or EC	4 lb. heptachlor					
Strawberry weevil	Methoxychlor	14 Same as for Flea beetles						HG 46
White-fringed beetle	DDT	7	D, WP, or EC	10 lb. DDT	To soil surface and work into top 3 in.		Do not apply while fruit is on plants.		
	Chlordane	0.3	D, WP, or EC	5 lb. chlordane	do.		do.		
White grubs	Chlordane	0.3	D, WP, or EC	10 lb. chlordane	do.		do.		

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
STRAWBERRY (con.)								
Wireworms	Aldrin	0.1	D, WP, or EC	4 lb. aldrin	To soil surface and work into top 6-9 in. before planting.		Do not apply while fruit is on plants. DDT recommended only in irrigated lands in West.	FB 1866
	Chlordane	0.3	D, WP, or EC	10 lb. chlordane				
	DDT	7	D, WP, or EC	10 lb. DDT				
	Dieldrin	0.1	D, WP, or EC	3 lb. dieldrin				
	Heptachlor	--	D, WP, or EC	3 lb. heptachlor				
	Ethylene dibromide	5 (inorganic bromides)	40% soln. (3.6 lb./gal.) 85% soln. (12 lb./gal.)	10 gal. 3 gal.	Inject 8 in. deep into fallow soil every 12 in.		Do not apply within 3 weeks before planting.	
SWEET CORN								
Corn earworm								
Larvae in silks and ears	DDT	7	1 gal. each of 25% EC and light mineral oil to make 25 gal.	25 gal. as S	Apply 3 times at 3-day intervals beginning on day after silks appear. Wet silks thoroughly.		Do not feed corn plants treated with DDT to dairy ani- mals or animals being finished for slaughter.	PS 11, L 411
Larvae in whorl, budworm damage	DDT	7	Reduce amount of oil by half.	25 gal. as S	To entire plant before tasseling and silking.			
European corn borer	DDT	7	EC or WP 5 or 10% D	1½ lb. DDT 40 or 20 lb.	Apply 4 times at 5-day intervals beginning when borers start hatching or begin feeding. Cover plants thoroughly.		do.	FB 2084, Iowa Pamphlet 176
	Ryania	Exempt	5% G 40% D	12 lb. (20 lb. if applied by air) 30-40 lb.				
Japanese beetle	DDT	7	25% EC 50% WP 5% D	3 pt. 3 lb. 20-35 lb.	On silks and foliage.		do.	HG 46
Wireworms	Chlordane	0.3	D, WP, or EC	4-10 lb. chlordane	To soil surface and work into top 6-9 in. before planting or after harvest.		DDT recommended only in irrigated lands in West.	FB 1866
	DDT	7	D, WP, or EC	10 lb. DDT				

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
SWEETPOTATO								
Sweetpotato weevil	Dieldrin	0.1	2% D	75 lb. in 1 applica- tion or 40 lb. in each of 2 applica- tions.	To soil at base of plants in strips 6-8 in. wide	30		HG 46
	Heptachlor	0.1	2 or 2.5% D	do.	do.	30		
Wireworms	Chlordane	0.3	D, WP, or EC	4-10 lb. chlordane	To soil surface every 2-5 years and work into top 6-9 in.		Apply either before planting or after harvest.	FB 1866
	Ethylene dibromide	50 (inorganic bromides)	40% soln. (3.6 lb./gal.) 85% soln. (12 lb./gal.)	10 gal. 3 gal.	Inject 8 in. into fallow soil every 12 in.		Do not apply within 3 weeks before planting.	
SWISS CHARD								
Beet webworm	Pyrethrum	Exempt	0.2% D EC	20-30 lb. $\frac{1}{2}$ oz. pyrethrins	On foliage.			HG 46
Flea beetles	Rotenone	Exempt	1% D 5% powder	20-30 lb. $2\frac{1}{2}$ lb. in S	do.			
TOMATO, FIELD								
Aphids	Malathion	8	5% D 25% WP 50% EC	20-30 lb. 6 lb. $1\frac{1}{2}$ pt.	On foliage.	3		HG 46
	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	2 pt. in S	do.	3		
	Parathion	1	2% D WP or EC	20-30 lb. $\frac{1}{2}$ lb. parathion	do.	15	Restriction 2.	
Armyworms. See Tomato fruitworm.								
Blister beetles	DDT	7	10% D	20-30 lb.	On beetles.	5		HG 46
	Methoxychlor	14	D, WP, or EC	$1\frac{1}{2}$ lb. methoxychlor	do.	7		
	Toxaphene	7	20% D	20-30 lb.	do.	7		

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
TOMATO, FIELD (con.)								
Colorado potato beetle	Cryolite	7 (fluorine)	50-90% D	20-30 lb. as D 12 lb. cryolite in S	On foliage.	5		HG 46
	DDT	7	5% D 50% WP 25% EC	20-30 lb. 3 lb. 3 pt.	do.	5		
	Rotenone	Exempt	0.75% D 5% powder	20-30 lb. 2½ lb. in S	do.	--		
Cutworms (in soil)	DDT	7	D, WP, or EC	2 lb. DDT	On soil surface.	5		
	Toxaphene	7	D, WP, or EC	2 lb. toxaphene	do.	7		
Flea beetles	Cryolite	7 (fluorine)	50-90% D	20-30 lb. as D 12 lb. cryolite in S	On foliage.	5		
	DDT	7	5% D 50% WP 25% EC	20-30 lb. 3 lb. 3 pt.	do.	5		
	Methoxychlor	14	5% D 50% WP 25% EC	20-30 lb. 3 lb. 3 pt.	do.	7		
	Rotenone	Exempt	0.75% D 5% powder	20-30 lb. 2½ lb. in S	do.	--		
	Toxaphene	7	10% D	30 lb.	do.	7		
Hornworms	Cryolite	7 (fluorine)	50-90% D	20-30 lb. as D 12 lb. cryolite in S	On foliage.	5		HG 46, FB 2045
	TDE	7	10% D 50% WP 25% EC	20-30 lb. 4 lb. 1 gal.	do.	1		
	Toxaphene	7	10% D	30 lb.	do.	7		
Leaf miners	Parathion	1	2% D 25% WP 25% EC	20-30 lb. 2 lb. 1 qt.	do.	15	Restriction 2.	L 367

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
TOMATO, FIELD (con.)								
Spider mites	Aramite	1	3% D 15% WP	20-30 lb. 1½ lb.	On foliage.	15		HG 46
	Malathion	8	5% D 25% WP 50% EC	20-30 lb. 6 lb. 1½ pt.	do.	3		
	Parathion	1	2% D 25% WP 25% EC	20-30 lb. 2 lb. 1 qt.	do.	15	Restriction 2.	
Stink bugs	DDT	7	5% D 50% WP 25% EC	20-30 lb. 3 lb. 3 pt.	do.	5		HG 46
	Sabadilla	Exempt	20% D	20-30 lb.	do.	--		
Tomato fruitworm, tomato pinworm, armyworms, and climbing cutworms	Cryolite	7 (fluorine)	B consisting of 1 lb. cryolite in 10 lb. corn- meal	60 lb.	Scatter evenly over foliage. Time as for dusts.	--	Cryolite bait not effective against pinworm and horn- worms.	L 367
			50-90% D	30 lb. as D 15 lb. cryolite in S	To foliage when first fruits of main crop are setting; repeat in 2 and 4 weeks.	5		
	DDT	7	10% D 50% WP 25% EC	30 lb. 4 lb. 1 gal.	do.	5		
	TDE	7	10% D 50% WP 25% EC	30 lb. 4 lb. 1 gal.	do.	1		
Tomato psyllid	DDT	7	5% D 50% WP	25-35 lb. 2 lb.	On foliage when plants are 6 in. high if psyllid is present in area; repeat in 10 and 20 days.	5		FB 2045
Tomato russet mite	Parathion	1	D, WP, or EC	0.6 lb. parathion	On foliage when fruit begins to set; repeat in 2 and 4 weeks.	15	Restriction 2.	L 367
	Sulfur	Safe	20-50% D Wettable sulfur	30 lb. 10 lb.	do.			

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
TOMATO, GREENHOUSE								
Aphids	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	2 tsp./gal.	On foliage.	3	--	FB 2082
	Malathion	8	25% WP 50% EC 10% aerosol	4 lb./100 gal. 1½ pt./100 gal. 1 lb./50,000 cu. ft.	do.	3	--	
					In closed greenhouse in air above plants. Temperature should be 70-85°F. and venti- lators closed for at least 2 hours.	3	Restriction 6.	
	Parathion	1	10% aerosol	do.	do.	15	Restrictions 2 and 6.	
	TEPP	0	5% aerosol	do.	do.	3	do.	
Armyworms and cabbage looper	DDT	7	3% D 50% WP	20 lb. 2 tbsp./gal.	On foliage.	5	--	
	Malathion	8	10% aerosol	1 lb./50,000 cu. ft.	Same as for Aphids.	3	Restriction 6.	
	Parathion	1	10% aerosol	do.	do.	15	Restrictions 2 and 6.	
Cutworms (soil)	DDT	7	10% D	20 lb.	To soil surface.	5		
	Toxaphene	7	10% D	20 lb.	do.	7		
Garden centipede	Lindane	10	25% WP	5 oz./50 gal. per 1,000 sq. ft.	Sprinkle on soil and water it in. For newly set plants, put 1 pt. around base of each plant.		Do not use lindane for this purpose except in green- houses.	
Greenhouse leaf tier	DDT	7	3% D	20 lb.	On foliage.	5	--	
			5% aerosol	1 lb./50,000 cu. ft.	Same as for Aphids.	5	Restriction 6.	
	Parathion	1	10% aerosol	do.	do.	15	Restrictions 2 and 6.	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
TOMATO, GREENHOUSE (con.)								
Greenhouse whitefly	Malathion	8 Same as for Aphids					FB 2082
	Parathion	1	do.					
	TEPP	0	do.					
Mealybugs	Nicotine sulfate	2 (nicotine)	do.					
	Malathion	8	do.					
	Parathion	1	do.					
	TEPP	0	do.					
Spider mites	Malathion	8	do.					
	Parathion	1	do.					
	TEPP	0	do.					
Thrips	DDT	7	5% aerosol 3% D 50% WP	1 lb./50,000 cu. ft. 20 lb. 2 tsp./gal.	Same as for Aphids. On foliage. do.	5	Restriction 6. --	
	Malathion	8	. . . . . Same as for Aphids				
	Parathion	1	do.					
Tomato fruitworm and tomato pinworm	DDT	7 Same as for Thrips					
	Parathion	1	. . . . . Same as for Aphids				
Tomato russet mite	Parathion	1	do.					
	Sulfur	Safe	25-50% D	20 lb.	On foliage.	--	--	

VEGETABLE, BRAMBLE, AND STRAWBERRY INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
TURNIPS								
Aphids	Malathion	8	5% D 25% WP 50% EC	20-35 lb. 6 lb. 1½ pt.	On foliage when first leaves appear; repeat every 7 days as long as needed.	Tops 10, roots 3		HG 46
	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	2 pt. in S	do.	7		
	Rotenone	Exempt	1% D 5% powder	20-35 lb. 4 lb./100 gal. S	do.	--		
Caterpillars	DDT	7	5% D 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	On foliage every week or 10 days. On summer or fall plantings in South apply for web- worm as soon as true leaves appear.		Restriction 1.	
	Rotenone	Exempt	1% D 5% powder	20-35 lb. 4 lb./100 gal. S			--	
Flea beetles	DDT	7	5% D 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	On foliage.	--	Restriction 1.	
	Rotenone	Exempt	1% D 5% powder	20-35 lb. 4 lb./100 gal. S	do.	--	--	
	Methoxychlor	14	5% D 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	do.	Tops 14, roots 7	--	
Root maggots	Chlordane	0.3	5% D 45% EC 50% WP	20 lb. 2½ pt. 2½ lb.	Dust or spray as soon as plants appear; repeat soon after thinning.		Restriction 4.	
Vegetable weevil	DDT	7	5% D 50% WP 25% EC	20-35 lb. 3 lb. 3 pt.	On foliage.		Restriction 1.	
	Rotenone	Exempt	1% D 5% powder	20-35 lb. 4 lb./100 gal. S	do.		--	
Wireworms	Chlordane	0.3	D, WP, or EC	4-10 lb. chlordane	To soil surface and work into top 6-9 in.		Apply either before planting or after harvest. DDT recom- mended only in irri- gated lands in West.	
	DDT	7	D, WP, or EC	10 lb. DDT				FB 1866
	Ethylene dibromide	--	40% soln. (3.6 lb./gal.) 85% soln. (12 lb./gal.)	10 gal. 3 gal.	Inject 8 in. deep into fallow soil every 12 in.		Do not apply within 3 weeks before planting.	

FRUIT INSECTS

The recommendations for fruit insects are general and may need to be modified to apply to particular regions of the country. Consult your State agricultural experiment station for more detailed recommendations applicable to your conditions.

Do not feed vegetation under fruit trees that have been treated with insecticides to dairy animals or animals being finished for slaughter.

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
APPLE								
Aphids, apple and apple grain	DNOC	--	20% EC 40% WP	1½ pt. 1½ lb.	Dormant.	--	--	C 270
	BHC	5	10% gamma WP	2 lb.	Pre-pink or pink.	--	--	
	Lindane	10	25% WP	1 lb.	do.	--	--	
	Parathion	1	15% WP	1 lb.	When aphids become abundant.	14	--	
	Malathion	8	25% WP	2 lb.	do.	3	--	
	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	¾-1 pt. + hydrated lime 1 lb.	do.	3	--	
	Demeton	0.75	EC (2 lb./gal.)	½-1 pt.	do.	21	Limit to 3 appli- cations after first cover.	
	TEPP	0	20% EC or 40% EC	½-2/3 pt. ¾-1/3 pt.	do.	3	--	
Aphid, rosy apple	DNOC	--	20% EC 40% WP	1½ pt. 1½ lb.	Dormant.	--	--	
	BHC	5	10% gamma WP	2 lb.	Pre-pink or pink.	--	--	
	Lindane	10	25% WP	1 lb.	do.	--	--	
	Parathion	1	15% WP	1 lb.	do.	--	Do not use on McIntosh or related varieties.	
	Malathion	8	25% WP	2-2½ lb.	Pre-pink or pink or when aphids appear.	3	--	
	Demeton	0.75	EC (2 lb./gal.)	½-1 pt.	do.	21	Same as for other apple aphids.	
	TEPP	0	20% EC 40% EC	½-2/3 pt. ¾-1/3 pt.	do.	3	--	

FRUIT INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
APPLE (con.)								
Aphid, woolly apple	BHC	5	10% gamma WP	2 lb.	In first cover spray, if aphids are present.	—	Later application may impart off- flavor to fruit.	C-270
	Lindane	10	25% WP	1 lb.				
	Malathion	8	25% WP	2-2½ lb.	When aphids appear.	3	—	
	Parathion	1	15% WP	1 lb.	do.	14	—	
Apple flea weevil	DDT	7	50% WP	2 lb.	Pre-pink or pink.		On McIntosh or related varieties use DDT instead of parathion.	
	Parathion	1	15% WP	1 lb.	do.			
Apple lace bug	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	¾ pt. + hydrated lime 1 lb.	When lace bugs are present.	3		C 270
Apple and thorn skeletonizer	DDT	7	50% WP	2 lb.	1-2 applications early in spring when young caterpillars appear.			
	Lead arsenate	7 (combined lead)	Powder	2 lb. + hydrated lime 2 lb.	do.			
Apple maggot	DDT	7	50% WP	2 lb.	3-4 applications 10 days apart beginning when flies appear.	40		
	Lead arsenate	7 (combined lead)	Powder	3 lb. + hydrated lime 3 lb.	2-3 applications 10-14 days apart beginning when flies appear.	40		
	Lead arsenate + DDT	7 (combined lead) + 7	Powder + 50% WP	3 lb. + 2 lb.	2-3 applications 14 days apart beginning when flies appear.	40		
	Methoxychlor	14	50% WP	2 lb.	3-5 applications, as needed, 10 days apart beginning when flies appear.	14		
	Parathion	1	15% WP	1½ lb.	For late applications, 5-7 days apart, when other recommended materials might lead to excessive residues.	14		

FRUIT INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
APPLE (con.)								
Apple red bug	DDT	7	50% WP	2 lb.	At petal fall.			
	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	1 pt.	do.			
Bagworm	Chlordane	0.3	50% WP	2 lb.	In May or June when young first appear.			
	Lead arsenate	7 (combined lead)	Powder	3-4 lb. + hydrated lime 3 lb.	do.			
Borer, roundheaded apple tree	Lead arsenate	7 (combined lead)	Powder	3 lb. + hydrated lime 3 lb.	About 3 weeks after petal fall and 2-3 weeks later.			L 274
	Dichloroethyl- ether	--	100%	--	In fall inject into borer tunnels; in spring examine trees and treat tunnels missed in fall.			
	Paradichloro- benzene + carbon disulfide	--	1:1 mixture	--	do.			
	Pyrethrum	Exempt	1.5-2.5% alcohol extract of pyrethrins	--	do.			
	Rotenone	Exempt	1.5% extract	--	do.			
Borer, shot-hole	DDT	7	50% WP	2 lb.	Two, when adults are active in May and in September.	40	Postpone fall appli- cation until crop is harvested.	C 270, FB 1861, L 274
	Parathion	1	15% WP	2 lb.		14		
Cankerworms, fall and spring	DDT	7	50% WP	1 lb.	Pink.			L 183
	Lead arsenate	7 (combined lead)	Powder	3 lb. + hydrated lime 3 lb.	do.			

FRUIT INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
APPLE (con.)								
Codling moth	Pacific Northwest DDT	7	50% WP	1-2 lb.	2-4 cover sprays, first about 3 weeks after calyx and others at about 3-week inter- vals.	40		C 270
	Methoxychlor	14	50% WP	3 lb.	do.	14		
	<u>Other areas</u> DDT	7	50% WP	2 lb.	3 or 4 at 10-14 day intervals beginning about 10-14 days after calyx for first brood;	40	After 5 DDT sprays change to other	
	DDT + parathion	7 + 1	50% WP + 15% WP	1½ lb. + ½-1 lb.	1-3 at 10-12 day intervals for second and third broods.	40	than a chlorinated hydrocarbon insecti- cide for additional covers.	
	DDT + malathion	7 + 8	50% WP + 25% WP	1½ + 2 lb.	do.	40	do.	
	Methoxychlor	14	50% WP	3 lb.	do.	14	Do not use in late season applications following full early season DDT program.	
	Parathion	1	15% WP	1½ lb.	do.	14	Do not use on McIntosh and related varieties.	
	EPN	3	25% WP	1 lb.	3-4 at 10-12 day intervals beginning at petal fall for first brood; 1-3 at 10-14 day intervals for second and third broods.	15	do.	
	Lead arsenate	7 (combined lead)	Powder	3 lb. + hydrated lime 3 lb.	do.	40	Use only to control light infestations or where it has been satisfactory. Change to another material to control second and third brood if fruit is not to be washed.	

Codling moth continued on page 67.

FRUIT INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
<u>APPLE (con.)</u> Codling moth (con.)	<u>Other areas</u> Ryania	Exempt	Powder	5-6 lb.	3-4 at 10-14 day intervals beginning at petal fall for first brood; 1-3 at 10-14 day intervals for second and third broods.	7	Suggest for trial to control strains resistant to DDT or for late applica- tions to avoid excessive residues of other materials at harvest.	C 270
Climbing cutworms	DDT	7	10% D	Small handful	On trunk and at ground about base of tree when opening buds are attacked.			
Eye-spotted bud moth	Lead arsenate	7 (combined lead)	Powder	3 lb.	1 or 2 at 10-day inter- val at pink or when buds are pushing out.			
Fall webworm	DDT	7	50% WP	2 lb.	Midsummer, when webs are first noticed.	40		
	Lead arsenate	7 (combined lead)	Powder	2 lb. + hydrated lime 2 lb.	do.	40		
Fruitworms	DDT	7	50% WP	2 lb.	Calyx or first cover.			
	Lead arsenate	7 (combined lead)	Powder	3 lb. + hydrated lime 3 lb.	do.			
Grasshoppers	Chlordane	0.3	40% WP	2½ lb.	Spray orchard ground cover and fence rows with 100 gal./acre when hoppers become numerous.	30		
	Parathion	1	15% WP	2½ lb.		14		
	Toxaphene	7	60% EC	1/3 gal.		30		

FRUIT INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
APPLE (con.)								
Japanese beetle	DDT	7	50% WP 25% EC 5% D	2 lb. 2 qt. 30 lb./acre	When beetles appear; repeat 10-14 days later if infestation continues.	40	—	FB 2004, PS 4
	Methoxychlor	14	50% WP 25% EC	3 lb. 3 qt.	do.	14	—	
	Parathion	1	15% WP	2 lb.	do.	14	—	
	Rotenone	Exempt	4% powder	3 lb.	When beetles appear; repeat at 7-10 day intervals as long as infestation continues.	1	Do not use near ponds or streams containing fish.	
Leafhoppers	DDT	7	50% WP	1 lb.	1-2 when leafhoppers appear.	40	—	C 270
	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	$\frac{1}{2}$ -1 pt.	do.	3	Use with soap or hydrated lime.	
	Parathion	1	15% WP	1 lb.	do.	14	—	
Leaf roller, fruit tree	Mineral oil	Exempt	EC or emulsion	3% oil	Dormant.			
	DDT	7	50% WP	2 lb.	When buds begin to separate.			
	Lead arsenate	7 (combined lead)	Powder	4 lb. + hydrated lime 4 lb.	do.			
Leaf roller, red- banded	Lead arsenate	7 (combined lead)	Powder	3 lb. + hydrated lime 3 lb.	Calyx and first cover.	—	—	Do not use on McIntosh or related varieties.
	Parathion	1	15% WP	1 lb.	Calyx and first cover and fifth or sixth cover.	14		
	TDE	7	50% WP	1 $\frac{1}{2}$ lb.	Calyx and fifth or sixth cover.	40	—	

FRUIT INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
APPLE (con.)								
Mite, clover	Mineral oil	Exempt	EC or emulsion	3% oil	Delayed dormant.	—		C 270
	Aramite	1	15% WP	1½ lb.	When mites appear in numbers; repeat if infestation persists.	14		
	Malathion	8	25% WP	2-2½ lb.	do.	3		
	Sulphenone	8	50% WP	1½-2 lb.	do.	7		
Mite, European red	Mineral oil	Exempt	EC or emulsion	3% oil	Late dormant--delayed dormant.	—	—	
	Overex	3	50% WP	¼ lb. ½ lb.	Pink, calyx. In cover sprays as needed.	21	—	
	Demeton	0.75	EC (2 lb./gal.)	½-1 pt.	Pink and later as needed; summer appli- cations can be 21 days apart.	21	Limit to 3 applica- tions after crop is present.	
	Aramite	1	15% WP	1½ lb.	In cover sprays.	14	—	
	Chlorobenzilate	5	25% WP	1¼-1½ lb.	do.	14 (tentative)	—	
	EPN	3	25% WP	½-¾ lb.	In cover sprays; 2 applications 7-10 days apart.	15	Do not use on McIntosh or related varieties or if phosphorus-resist- ant strains of mites are present.	
	Parathion	1	15% WP	1 lb.	do.	14	do.	
	Malathion	8	25% WP	2-2½ lb.	do.	3	Do not use if phosphorus-resist- ant strains of mites are present.	
	TEPP	0	20% EC 40% EC	½-2/3 pt. ¾-1/3 pt.	In cover sprays; 2-3 applications 7 days apart.	3	Do not use with lime.	

FRUIT INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
<u>APPLE (con.)</u>								
Mites, two-spotted spider, four-spotted spider, McDaniel, Schoeni, and others	Aramite	1	15% WP	1½ lb.	In cover sprays when infestation threatens.	14	--	C 270
	Demeton	0.75	EC (2 lb./gal.)	½-1 pt.	do.	21	Limit to 3 applications after crop is set.	
	Chlorobenzilate	5	25% WP	1¼-1½ lb.	In cover sprays; 2 applications 7-10 days apart.	14 (tentative)	--	
	Overex	3	50% WP	½ lb.	In cover spray, 2-3 applications 2-4 weeks apart.	21	--	
	EPN	3	25% WP	½-¾ lb.	In cover sprays when infestation starts, or at half strength in second, third, and fourth, or third, fourth, and fifth cover sprays to prevent or delay infestation.	15	Do not use on McIntosh or related varieties or if phosphorus-resistant strains are present.	
	Parathion	1	15% WP	1 lb.	do.	14	do.	
	Malathion	8	25% WP	2-2½ lb.	do.	3	Do not use if phosphorus-resistant strains are present.	
	TEPP	0	20% EC 40% EC	¼-2/3 pt. ¼-1/3 pt.	In cover sprays; 2-3 applications 7 days apart.	3	Do not use with lime.	
Mite, pear leaf blister	Lime sulfur	Safe	Liquid	8 gal. 32° Be. or equivalent to give 3½° Be. in dilute spray.	In fall when mites are migrating from leaves to buds or late in dormant season just as buds are swelling.			C 270, FB 1739
	Mineral oil	Exempt	EC or emulsion	3% oil	Just as buds are swelling.			

Pear leaf blister mite continued on page 71.

FRUIT INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
APPLE (con.)	Demeton	0.75	EC (2 lb./gal.)	$\frac{1}{2}$ -1 pt.	In spring or summer when dormant treatment has been omitted or ineffective.	21	In severe infesta- tions 1 qt./100 gal. will give better control, but may cause some injury.	C 270, FB 1739
Mite, pear leaf blister (con.)								
Periodical cicada	TEPP	0	40% EC	$\frac{1}{4}$ - $\frac{1}{2}$ pt.	Late May or early June when adults start emerging; repeat every 3-5 days as necessary.		Spray early in morning before cicadas become active.	L 340
Plum curculio	Dieldrin	0.25	50% WP	$\frac{1}{2}$ lb.	1-3 every 7-10 days beginning at petal fall.		Do not use later than 3 weeks after petal fall.	YB 1952
	EPN	3	25% WP	1 $\frac{1}{2}$ lb.	do.		Do not use on McIntosh or related varieties; may russet Golden Delicious and other tender varieties.	
	Parathion	1	15% WP	1 $\frac{1}{2}$ -2 lb.	do.		do.	
	Lead arsenate	7 (combined lead)	Powder	3 lb. + hydrated lime 3 lb.	do.		--	
	Methoxychlor	14	50% WP	3 lb.	do.		--	
Scales, Forbes, Putnam, and San Jose	Mineral oil	Exempt	EC or emulsion	3% oil	Dormant or delayed dormant. If "Superior" oil is used, 2% is effective. In Pacific Northwest dormant application of 1% oil with 3% liquid lime sulfur is effective.	--		
	Malathion	8	25% WP	2-2 $\frac{1}{2}$ lb.	3, when crawlers are present, about second, fifth, and sixth, or second, sixth, and seventh covers.	3		

Forbes, Putnam, and San Jose scales continued on page 72.

FRUIT INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
APPLE (con.)								
Scales, Forbes, Putnam, and San Jose (con.)	Parathion	1	15% WP	$\frac{1}{2}$ -1 lb.	3, when crawlers are present, about second, fifth, and sixth, or second, sixth, and seventh covers.	14		
			25% WP	1 lb.	One in 2-week period prior to pre-pink of pears.	—	Applies to Pacific Northwest.	
Scales, oyster shell and scurfy	Mineral oil	Exempt	EC or emulsion	3-4% oil	Dormant.		4% oil in Pacific Northwest.	C 270
	DDT	7	50% WP	2 lb.	When eggs are hatching, usually calyx and first cover.		—	
	Parathion	1	15% WP	2 lb.	do.		Do not use on McIntosh or related varieties; may russet Golden Delicious and other tender varieties.	
Tent caterpillars Eastern	DDT	7	50% WP	2 lb.	When caterpillars appear in early spring.			L 161
Western	DDT	7	50% WP	2 lb.	Just before bloom.			C 270
Treehoppers	Mineral oil	Exempt	EC or emulsion	4% oil	Dormant.			
Unspotted tentiform leaf miner	Parathion	1	15% WP	1-1 $\frac{1}{2}$ lb.	When first miner appears.	14	Do not use on McIntosh or related varieties.	
	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	3/4-1 pt.	do.	3	—	
	Demeton	0.75	EC (2 lb./gal.)	1 pt.	do.	21	Limit to 3 applica- tions after crop is set.	
Yellow-necked caterpillar	Parathion	1	15% WP	$\frac{1}{2}$ lb.	When young appear, usually July and August.	14		
	Malathion	8	25% WP	2 lb.	do.	3		

FRUIT INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
APRICOT	. . . . . Same as for Peaches						Do not use Aramite on apricots after fruit forms.	
BLUEBERRY								
Bud mite	Summer oil	Exempt	EC or emulsion	2% oil	2, in late August and late September.			
Blossom weevil	Dieldrin	—	25% WP	2 lb.	When leaf buds show green and 7-9 days later.			
	Parathion	1	15% WP 1 % D	1½ lb. 25-35 lb./acre				
Blueberry maggot	Calcium arsenate	3.5 (As ₂ O ₃)	50% D	6-7 lb./acre	2 at 10-day intervals, first 7-10 days after flies appear in numbers.	14	Use only on fruit to be processed, and remove residue before processing.	FB 1951
	Parathion	1	15% WP 1% D	1½ lb. 45 lb./acre	do.	21	—	
	Rotenone	Exempt	2% D	25 lb./acre	As above, but 3 or 4 applications.	3	—	
Cherry fruitworm, cranberry fruit- worm, plum cur- culio, and sharp- nosed leafhopper	Methoxychlor	14	50% WP 5% D	3 lb. 25 lb./acre	When largest berries of earliest varieties are about ¼ in. in diameter and 7-10 days later.	14		
	Parathion	1	15% WP 1% D	1½-2 lb. 25-35 lb./acre		14		
Cranberry rootworm	Chlordane	0.3	5% D	200 lb./acre 2 oz./plant	Disk in before planting. Work into soil within 2 ft. of plant.			
	DDT	7	5% D	500 lb./acre 6 oz./plant	Same as for chlordane. do.			
Scale insects	Lime sulfur	Exempt	Liquid	1 gal. in 9 gal. water	Dormant.			
CHERRY								
Black cherry aphid	DNOC	0	40% WP 20% EC	1½ lb. 1½ qt.	Dormant.			C 270
	Malathion	8	25% WP	2 lb.	2 at 10-14 day inter- vals, first when	3		
	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	3/4 pt.	aphids appear about time buds are breaking.	3		

Black cherry aphid continued on page 74

FRUIT INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
CHERRY (con.)								
Black cherry aphid (con.)	Parathion	1	15% WP	1 lb.	2 at 10-14 day inter- vals, first when aphids appear about time buds are break- ing.	14		C 270
	TEPP	0	40% EC 20% EC	$\frac{1}{4}$ pt. $\frac{1}{2}$ pt.	do.	3		
Cherry fruitworm	Methoxychlor	14	50% WP	2 lb.	4 weeks after petal fall.	14		
Fruit flies, cherry and black cherry	Lead arsenate	7 (combined lead)	Powder	$2\frac{1}{2}$ -3 lb. + lime $2\frac{1}{2}$ -3 lb.	Begin all treatments when first adults are trapped. 2-3 applications at 10- 14 day intervals.	14	Use only on fruit to be processed, and remove residue before processing. Reduce to 1 lb. in spray on English Morello variety.	C 270
		7	10% D	40 lb./acre	3-4 applications at 10-day intervals.	14		
	Malathion	8	25% WP	2 lb.	2-3 applications at 10-day intervals.	3	--	
	Methoxychlor	14	50% WP	2 lb.	do.	7	--	
	Parathion	1	15% WP 2% D	1-2 lb. 50 lb./acre	do. 2-4 applications at 7- day intervals.	14	--	
	Parathion + methoxychlor	1 + 14	15% WP + 50% WP	1 lb. + 1 lb.	2-3 applications at 10-day intervals.	14	--	
	Rotenone	Exempt	4-4.5% powder 0.75% D	2-3 lb. 40 lb./acre	2-4 applications at 7-10 day intervals.	1	--	
Pandemis moth	DDT + parathion	7 + 1	50% WP + 15% WP	2 lb. + $\frac{1}{2}$ lb.	Just before bloom.			
Pear-slug	DDT	7	50% WP	2 lb.	1-2, first about 20 days after bloom.	30	--	C 270
	EPN	3	25% WP	1 lb.	do.	15	--	

Pear-slug continued on page 75.

FRUIT INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
CHERRY (con.)								
Pear-slug (con.)	Lead arsenate	7 (combined lead)	Powder	2 lb. + lime 2 lb.	1-2, first about 20 days after bloom.	30	Reduce to 1 lb. on English Morello variety.	C 270
	Parathion	1	15% WP	1½ lb.	do.	14	--	
Pear thrips	DDT	7	50% WP 5% D	2 lb. 40 lb./acre	1-3, first just after buds show green as buds begin to show white and just after bloom.	30		
Plum curculio	EPN	3	25% WP	1-1½ lb.	2-3 at 8-10 day inter- vals beginning at petal fall or shuck split.	15	--	
	Methoxychlor	14	50% WP	2 lb.	do.	14	--	
	Parathion	1	15% WP	2 lb.	do.	14	--	
	Dieldrin	0.25	50% WP	½ lb.	do.	30	--	
	Lead arsenate	7 (combined lead)	Powder	2-3 lb. + lime 2-3 lb.	Petal fall, shuck fall.	30	Reduce to 1 lb. on English Morello variety.	
Scales, San Jose and Forbes	Mineral oil	Exempt	EC or emulsion	3% oil	Dormant.	--	--	
	Malathion	8	25% WP	2-2½ lb.	3 weeks before and immediately after harvest.	3	--	
	Parathion	1	25% WP	1 lb.	2 weeks prior to pre- pink of pears.	14	Applies to Pacific Northwest.	
			15% WP	½-1 lb.	3 weeks before and im- mediately after har- vest.	14	--	
Shot-hole borer	DDT	7	50% WP	2 lb.	2, when adults are active in May and in September.	30		C 270, FB 1861, L 274
	Parathion	1	15% WP	2 lb.		14		
CITRUS	.....Results of USDA research are made available to local groups issuing recommendations.							

FRUIT INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
CURRENT AND GOOSEBERRY								
Currant aphid	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	1 pt.	As leaf buds are open- ing or later if infestation occurs.	3		
Imported currant- worm	Lead arsenate	7 (combined lead)	Powder 10-15% D	2 lb. 20-25 lb./acre	Soon after leaves are out.	—	Do not apply when fruit is present.	
	Rotenone	Exempt	4-5% WP 1% D	3 lb. 20-25 lb./acre	When worms appear. do.	3	-- --	
San Jose scale	Lime sulfur	Safe	Liquid	1 gal. in 7-8 gal. water	Dormant.			FB 1676
	Mineral oil	Exempt	EC or emulsion	2% oil	do.			
GRAPE								
Climbing cutworms	DDT	7	50% WP	2 lb.	Just as buds are swelling.			FB 1893
			10% D	Small handful.	To lower part of vine and ground below as buds are swelling.			
European fruit lecanium	EPN	3	25% WP	1 lb.	When eggs have just hatched and nymphs are migrating over vines, usually shortly after bloom.			
	Parathion	1	15% WP	1 lb.				
Grape berry moth	DDT	7	50% WP	1½ lb.	At petal fall, 7-14 days later, when second brood eggs are found (35-45 days after bloom), and 14 days later. (A sticker may be used according to manu- facturers' directions in first 2 applica- tions but not later.)	40	Do not use a sticker with DDT after grapes reach buck- shot size. -- -- --	FB 1893
	DDT + parathion	7 + 1	50% WP + 15% WP	1½ lb. + 1 lb.		40		
	EPN	3	25% WP	1 lb.		15		
	Methoxychlor	14	50% WP	2 lb.		14		
	Methoxychlor + parathion	14 + 1	50% WP + 15% WP	2 lb. + 1 lb.		14		
	Parathion	1	15% WP	1 lb.		14	Do not use bordeaux mixture with para- thion.	

FRUIT INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
GRAPE (con.)								
Grape flea beetle	DDT	7	50% WP	2 lb.	In early spring when buds begin to swell if adults appear, or when shoots are 6-8 in. long if larvae are present.	40		FB 1893
Grape leaf folder	DDT	7	50% WP	1½ lb.	When adults or small larvae are observed; schedule for grape berry moth gives control.	40		
Grape leafhopper and rootworm	DDT	7	50% WP	1½ lb.	Same as petal fall and first-cover spray for grape berry moth.	40		
Grape mealybug	EPN	3	25% WP	1½ lb.	1 or 2 applications 7- 10 days apart when overwintering nymphs move out from under bark to base of buds onto grape clusters (may be just before or after bloom).			
	Parathion	1	15% WP	1 lb.				
Grape phylloxera (leaf form only)	Lindane	10	25% WP	2 lb.	When galls first appear on leaves, 2 applica- tions 7-10 days apart.	60		
Grapevine aphid	Nicotine sulfate	2 (nicotine)	40% nicotine soln.	1 pt. with soap or bordeaux mixture	When aphids appear on shoots.	3		FB 1893
	Parathion	1	15% WP	1 lb.	do.	14		
Japanese beetle	.....Same as for Apple.....							FB 2004
Leaf-eating caterpillars	Lead arsenate	7 (combined lead)	Powder	3 lb.	If regular program is not effective add to second, third, or fourth application.		No application later than 21 days after bloom.	FB 1893
Red-banded leaf roller	Lead arsenate	7 (combined lead)	Powder	3 lb.	Add to second (just before bloom) or third (petal fall) application.		do.	
	Parathion	1	15% WP	2 lb.		14	--	
Rose chafer	DDT	7	50% WP	2 lb.	When adults first appear (usually near time of bloom of Concord grapes).			

FRUIT INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
GRAPE (con.)								
Two-spotted spider mite	Malathion	8	25% WP	2 lb.	When mites first appear on leaves, and 7 days later if infestation is heavy.	3		
	Parathion	1	15% WP	$\frac{1}{2}$ -1 lb.		14		
MANGO								
Oriental fruit fly	Malathion	8	25% WP	3 lb./40-150 gal./ acre + 1 lb. yeast protein or 2 lb./3-40 gal./acre + 1 lb. yeast protein	Every 2 weeks while flies are on fruit.	2		ARS-33-3
PASSION FRUIT								
Oriental fruit fly and melon fly	.....Same as for Mango.....							
PEACH								
Aphid, green peach	Mineral oil	Exempt	EC or emulsion	4% oil	When buds are swelling.	--		FB 1676, 1861, C 270
Aphids, green peach, black cherry, black peach, rusty plum	Malathion	8	25% WP 50% EC	2 lb. 1 pt.	Early in season when aphids appear.	7		
	Parathion	1	15% WP	1 lb.	do.	14		
	Nicotine sulfate (nicotine)	2	40% nicotine soln.	$\frac{3}{4}$ pt.	do.	3		
Borer, American plum	EPN	3	25% WP	2 lb.	3-4 at 21-day inter- vals beginning in June.	15		
	Parathion	1	15% WP	3 lb.		14		
Borer, lesser peach tree	EPN	3	25% WP	2 lb.	4 to trunks and scaf- fold limbs at 21-day intervals, beginning with emergence in June. In Georgia 2 each 4 weeks apart for first (April and May) and second (August and September) broods.	15		FB 1861
	Parathion	1	15% WP	3 lb.		14		

FRUIT INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
PEACH (con.)								
Borer, peach tree	DDT	7	50% WP	6-8 lb.	In latitude of Virginia and northward, 2 to trunks (July 1-15 and about 3 or 4 weeks later); southward 3 (July 10-15 and after 3- or 4-week intervals); in south Georgia 4 at 4-week intervals, beginning August 1.	21	If harvest interferes with application, postpone until just after harvest is completed; avoid hitting fruit with spray.	FB 1861
	EPN	3	25% WP	2 lb.		15		
	Parathion	1	15% WP	2-3 lb.		14		
	Ethylene dichloride	--	50% EC	1/8 pt. 7.5% emulsion for 1-year-old trees to 1/2 pt. 20% emulsion for trees 4 years and older.	To ground in ring around trunk in fall or during first warm spell in spring.	--	Do not use in heavy, damp soil.	
	Paradichlorobenzene	--	Crystals	1/4-1 1/2 oz./tree, depending on age and size.	To ground in ring around trunk in late August to early September in northern areas; to late October in more southern areas.	--	Keep crystals from touching trees.	
Borer, peach twig	Lime sulfur	Safe	Liquid	3 1/2 ^o Be. or 1 part lime sulfur to 10 parts water	Before pink stage of blossom buds.		Do not use on apricots.	C 270, FB 1861
	Basic lead arsenate	7 (combined lead)	Powder	3 lb. or 4 lb.	Just before bloom. Petal fall.		--	
	DDT	7	50% WP	2 lb.	Petal fall.		--	
Borer, shot-hole	DDT	7	50% WP	2 lb.	When beetles are active, usually in late May or June and September.	30	Do not make more than 1 application within 6 weeks of harvest and make it at least 4 weeks before.	
	DDT + parathion	7 + 1	50% + 15% WP	1 lb. + 1 1/2 lb.		30		
	Parathion	1	15% WP	2 lb.	do.	14		

FRUIT INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
PEACH (con.)								
Climbing cutworms	DDT	7	10% D		Small handful on lower trunk and surrounding ground soil in early spring when worms appear.			C 270
Earwigs	DDT	7	10% D		Thoroughly to trunk and surrounding soil about a month before fruit ripens.	30	Do not get dust on fruit.	
Grasshoppers	..... Same as for Apple							
Japanese beetle	do.							
Leaf roller, red-banded, and <u>Platynota flavedana</u>	Parathion	1	15% WP	2 lb.	When leaf rollers become active, about July 1.	14		
	TDE	7	50% WP	1½ lb.		30		
Mites, European red and two-spotted spider	Mineral oil	Exempt	EC or emulsion	3% oil	Dormant.	--		FB 1676, C 270
	Aramite	1	15% WP	1½ lb.	In summer 1-2 applications 7-10 days apart.	21 (tentative)		
	EPN	3	25% WP	½-1 lb.	do.	15		
	Malathion	8	25% WP	2-2½ lb.	do.	7		
	Parathion	1	15% WP	1 lb.	do.	14		
	TEPP	0	40% EC 20% EC	1/3 pt. 2/3 pt.	do.	3		
Oriental fruit moth	DDT	7	50% WP	2 lb.	Pacific Northwest. 2-3 applications--at petal fall, 12-14 days later, and, if infestation warrants, in June when moths appear in bait traps. Other areas. 3 applications at 10-day intervals beginning at shuck split or 2 applications 6-8 and 4 weeks before harvest.	30	-- If DDT is used against second and third broods, do not make more than 1 application within 6 weeks of harvest and make it at least 4 weeks before harvest.	C 270, FB 1861

Oriental fruit moth continued on page 81.

FRUIT INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
PEACH (con.)								
Oriental fruit moth (con.)	EPN	3	25% WP	1½ lb.	3 applications at 10- day intervals begin- ning at shuck split or 2 applications 6 and 2-3 weeks before harvest.	15	--	C 270, FB 1861
	Parathion	1	15% WP	1½-2 lb.		14	--	
Pandemis moth	Parathion	1	25% WP	½ lb.	In early spring as soon as worms are found in trees.			C 270
Periodical cicada	TEPP	0	. . . . . Same as for Apple					L 340
Plum curculio	EPN	3	25% WP	1-1½ lb.	In southern areas at petal fall, 10 days later, 7-10 days later, and 4-5 weeks and 2 weeks prior to harvest; in northern areas 3-4 applications 7-10 days apart beginning at shuck- off.	15	--	FB 1861
	Methoxychlor	14	50% WP	3 lb.		21	--	
	Parathion	1	15% WP	1½-2 lb.		14	--	
	Dieldrin	0.1	50% WP	½ lb.	Can be substituted for EPN or parathion in petal fall and first cover.	--	Do not use after first cover spray.	FB 1861
	Lead arsenate	7 (combined lead)	Powder	2 lb. + lime 8 lb.	In southern areas at petal fall, 10 days later, 7-10 days later, and 1 month before harvest; in northern areas 3 applications 7-10 days apart beginning at shuck-off.	30		
Scales, European fruit, lecanium, and terrapin	Mineral oil	Exempt	EC or emulsion	4% oil	Dormant.	--		FB 1676, 1861, C 270
	Malathion	8	25% WP 50% EC	2-2½ lb. 1 qt.	At completion of hatching, about last of June.	7		
	Parathion	1	15% WP	2 lb.	do.	14		

FRUIT INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
PEACH (con.)								FB 1676, 1861, C 270
Scales, Forbes, San Jose, and white peach	..... Same as for Apple						
Stink bugs	Dieldrin	0.1	50% WP	$\frac{1}{2}$ lb.	At petal fall and first cover.	--	Do not use dieldrin after first cover.	FB 1861
	EPN	3	25% WP	$1\frac{1}{2}$ lb.	As for first-brood plum curculio.	15		
	Parathion	1	15% WP	2 lb.	do.	14		
Tarnished plant bug	DDT	7	50% WP	2 lb.	At petal fall and 8-10 days later.		--	Do not use dieldrin after first cover. -- --
	Dieldrin	0.1	50% WP	$\frac{1}{2}$ lb.	do.			
	EPN	3	25% WP	$1-1\frac{1}{2}$ lb.	do.			
	Parathion	1	15% WP	$1\frac{1}{2}-2$ lb.	do.			
PEAR								
Borers Same as for Apple							
Climbing cutworms	do.							
Codling moth	DDT	7	50% WP	2 lb.	2-4 cover sprays begin- ning with first cover.	30		C 270, FB 1739
	EPN	3	25% WP	1 lb.	do.	15		
	Methoxychlor	14	50% WP	3 lb.	do.	14		
	Parathion	1	15% WP	$1\frac{1}{2}$ lb.	do.	14		
	Lead arsenate	7 (combined lead)	Powder	3 lb.	2-4 cover sprays begin- ning with calyx.	40		
Fruit-tree leaf roller Same as for Apple							
Pear leaf blister mite	do.							

FRUIT INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
PEAR (con.)								C 270
Pear leaf worm	Lead arsenate	7 (combined lead)	Powder	2 lb.	At petal fall.			
Pear midge	DDT	7	50% WP	2 lb.	2 applications 7 days apart, first just before sepals separate on most advanced buds.			
Mites, clover, European red, two- spotted spider, McDaniel, and related species.	. . . . . Same as for Apple						
Pear psylla	Mineral oil	Exempt	EC or emulsion	2% oil	Late dormant.	—		C 270, FB 1739
	Rotenone + summer oil	Exempt	5% WP + EC or emulsion	2 lb. + 2 qt.	In summer when psylla occurs in numbers.	1		
	EPN	3	25% WP	1 lb.	At petal fall and during summer when psylla appears in numbers.	15		
	Malathion	8	25% WP	2 lb.		3		
	Parathion	1	15% WP	1 lb.		14		
Pear-slug	DDT	7	50% WP	2 lb.	About 2 weeks after bloom.			
	EPN	3	25% WP	1 lb.	do.			
	Parathion	1	15% WP	1½ lb.	do.			
	Lead arsenate	7 (combined lead)	Powder	2 lb.	do.			
Pear thrips	DDT	7	50% WP 5% D	2 lb. Thorough coverage.	When about half of buds are in green-tip stage.			

FRUIT INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
PEAR (con.)								
Plum curculio	EPN	3	25% WP	1½ lb.	At petal fall and 10 days later.			C 270, FB 1739
	Parathion	1	15% WP	2 lb.	do.			
	Lead arsenate	7 (combined lead)	Powder	3 lb.	do.			
	Dieldrin	0.25	50% WP	½ lb.	do.			
Scales, Forbes, San Jose, and scurfy	..... Same as for Apple							
Syneta leaf beetle	Lead arsenate	7 (combined lead)	Powder 30% D	3 lb. Thorough coverage	Calyx and 10-14 days later if infestation is severe.			
	DDT	7	5% D	do.	do.			
Treehoppers	Mineral oil	Exempt	EC or emulsion	4% oil	Dormant.			
PINEAPPLE								
Mealybug and red scale	Parathion	1	15% WP 1% D	1 lb. 85-90 lb./acre	When infestation is found on 3 adjacent plants; check every 1-2 months.	35-40		Fla. Cir. S-36
Pineapple mite	Sulfur	Safe	D	85-90 lb./acre	When mites appear.			
PLUM AND PRUNE								
Aphids, hop, mealy, plum, thistle, and green peach	Mineral oil	Exempt	EC or emulsion	4% oil	Dormant.	—		C 270
	Nicotine	2 (nicotine)	40% nicotine soln.	3/4-1 pt. + lime	When aphids first appear.	3		
	Parathion	1	15% WP	1 lb.	do.	14		
	Malathion	8	25% WP	2 lb.	do.	3		
	Demeton	—	EC(2 lb./gal.)	½-1 pt.	do.	—	Use only on non- bearing trees or after harvest.	
Borers	..... Same as for Peach							

FRUIT INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
PLUM AND PRUNE (con.)	Lead arsenate	7 (combined lead)	Powder	3 lb.	Just as tips of leaves are pushing out from buds; if infestation is serious, repeat in 7-10 days.			C 270
Eye-spotted bud moth								

TREE-NUT INSECTS

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
CHESTNUT								
Weevils	DDT	--	50% WP	4 lb.	3 weekly, beginning about August 15.			L 384
	Ethylene dibromide	--	40% soln.	1 cc./sq. ft.	Inject to depth of 5 in. after larvae enter soil.		Do not apply until harvest is completed.	
Mites	Aramite	--	15% WP	2 lb.	When mites appear in numbers.			
	Malathion	--	25% WP	2 lb.	do.			
FILBERT								
Filbert worm	Lead arsenate	--	Powder	3 lb.	About middle of July and 3 weeks later.			C 270, L 384
	DDT	--	50% WP	2 lb.	do.			
PECAN								
Black pecan aphid	Nicotine sulfate + summer oil or bordeaux mixture	-- -- --	40% nicotine soln. + EC or emulsion or tank mix	$\frac{1}{2}$ pt. + 2 qt. or 2-1-100 or as for Pecan scab	When yellow spots appear on foliage.		--	FB 1829
	Parathion	--	15% WP 1% D 25% WP	1 lb. Cover trees thoroughly 4 lb./5 gal./acre	do.		-- Apply by airplane.	
	Malathion	--	57% EC (5 lb./ gal.) 25% WP	$\frac{1}{2}$ gal./3 gal./acre 1 $\frac{1}{2}$ lb.	do.		do. --	
	Demeton	0.75	25% EC	1 pt.	do.		--	
	TEPP	--	40% EC	1 pt./5 gal./acre	do.		Apply by airplane.	
Curculio	BHC (gamma)	--	10% gamma WP	4 lb.	When buds show 1/4-1 in. of green growth.			
	Lindane	--	25% WP	1 $\frac{1}{2}$ lb.	do.			

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
PECAN (con.)								
Fall webworm	Lead arsenate	--	Powder	3 lb.	When webs become numerous and caterpillars are still small. do.		Use with 2-1-100 bordeaux mixture. do. --	FB 1829
	Calcium arsenate	--	Powder	3 lb.				
	DDT	--	50% WP	2 lb.				
May beetle	Lead arsenate	--	Powder	4 lb.	In spring when beetles are first noticed.		Use with 2-1-100 bordeaux mixture.	
	DDT	--	50% WP	2 lb.	do.		--	
	Parathion	--	15% WP	2 lb.	do.		--	
Mites	Parathion	--	15% WP	1 lb.	When mites appear in numbers and, if infestation is heavy, repeat in about 10 days.			
	Malathion	--	EC (5 lb./gal.)	1 pt.	do.			
	Demeton	0.75	25% EC	1 pt.	do.			
	Sulfur	Safe	WP	4 lb.	Add to parathion spray if species other than <u>Tetranychus bicoriae</u> are present.			
Obscure scale	Mineral oil	Exempt	EC or emulsion	2-3% oil	Dormant.			
Pecan leaf casebearer	DDT	--	50% WP	2 lb.	When buds begin to open or near end of July.		--	
	Parathion	--	15% WP	2 lb.	do.		--	
	Lead arsenate	--	Powder	3 lb.	do.		Use with 2-1-100 bordeaux mixture.	
Pecan nut casebearer	DDT	--	50% WP	2-3 lb.	1-2 applications 7 days apart, between about April 20 and May 15, or when tips of nuts turn brown.		--	
	Parathion	--	15% WP	2 lb.			--	
	EPN	0.5	25% WP	1½ lb.			--	

Pecan nut casebearer continued on page 88.

TREE-NUT INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
PECAN (con.)								
Pecan nut casebearer (con.)	Nicotine sulfate + summer oil	--	40% nicotine soln. + EC or emulsion	13 fl. oz. + 2 qt.	1-2 applications 7 days apart, between about April 20 and May 15, or when tips of nuts turn brown.		--	FB 1829
	Lead arsenate	--	Powder	6 lb.			Do not use in humid areas.	
	Malathion	--	25% WP	3 lb.	do.		--	
Pecan phylloxera	Nicotine sulfate + lime sulfur or summer oil	-- Safe Exempt	40% nicotine soln. + 30-32° Be. or EC or emulsion	3/4 pt. + 2½ gal. or 2 qt.	Delayed dormant, or until buds show 1-2 in. of growth.			
	BHC (gamma)	--	10% gamma WP	2½ lb.	do.			
	Lindane	--	25% WP	1¼ lb.	do.			
	Malathion	--	25% WP	3 lb.	do.			
	Dinitrobutyl- phenol	--	36% EC	3 qt.	Late February until buds begin to swell.			
	Dinitrocyclo- hexylphenol + mineral oil	-- Exempt	40% WP + EC or emulsion	2 lb. + 2%	do.			
Pecan weevil	DDT	--	50% WP	6 lb.	When at least 6 weevils can be jarred from any tree, and 10-14 days later.			
	Toxaphene	7	40% WP EC (8 lb./gal.)	6 lb. 2½ pt.				
Spittlebug	Parathion	--	15% WP	2 lb.	About time first leaves are half grown.			
	Nicotine sulfate + summer oil	-- Exempt	40% nicotine soln. + EC or emulsion	3/4 pt. + 3 qt.	do.			
Twig girdler	DDT	--	50% WP	4 lb.	3 at 2-week intervals when first injured branches are noted.			
	Parathion	--	15% WP	3 lb.				
Walnut caterpillar	. . . . . Same as for Fall webworm on pecan							

TREE-NUT INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Formulation per 100 gal. of water unless otherwise indicated	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
WALNUT	Nicotine sulfate	--	40% nicotine soln.	$\frac{1}{2}$ pt. + soap or spreader	When aphids appear.			C 270
Walnut aphid			2% D	Cover tree thoroughly.	do.			
Walnut caterpillar		 Same as for Fall webworm on pecan					

COTTON INSECTS

Crop and insect	Insecticide	Tolerance (Cotton- seed) (p.p.m.)	Formulation	Dosage (Pounds of insecticide per acre unless other- wise indicated)	Application (As needed unless otherwise indicated)	Restrictions		References
						Min. days from last application to hand picking	Other	
Boll weevil	Aldrin	--	EC or D	0.25-0.75	Every 3-7 days until controlled.	5	--	Tenth Annual Conference Report on Cotton Insect Research and Control
	BHC (gamma)	--	EC or D	0.30-0.45	do.	--	--	
	Calcium arsenate	--	D	7-10	do.	--	--	
	Dieldrin	--	EC or D	0.15-0.50	do.	5	--	
	Endrin	0	EC or D	0.2-0.5	do.	5*	--	
	EPN	0.5	EC or D	0.5-0.75	do.	3	Do not pasture cotton that received late applications. See Precautions.	
	Guthion	--	EC or D	0.25-0.50	do.	--	Do not apply within 21 days of picking. Do not use on other crops for food or forage. Do not pasture cotton that received late appli- cations. See Precautions.	
	Heptachlor	0.1	EC or D	0.25-0.75	do.	5	--	
	Malathion	--	EC or D	1-3	do.	--	--	
	Methyl parathion	--	EC or D	0.25-0.5	do.	15	See Precautions.	
	Toxaphene	--	EC or D	2-3	do.	--	--	
Bollworm	Calcium arsenate	--	D	12-15	Every 5-7 days until controlled.	--	--	Do not apply within 21 days of picking. Do not use on other crops for food or forage. Do not pasture cotton that received late appli- cations. See Precautions.
	DDT	--	EC or D	0.5-1.5	do.	--	--	
	Endrin	0	EC or D	0.2-0.5	do.	5*	--	
	Guthion	--	EC or D	0.75-1.0	do.	--	--	
	Toxaphene	--	EC or D	2-4	do.	--	--	

*Workers entering fields within 5 days after application should be protected.

COTTON INSECTS (continued)

Crop and insect	Insecticide	Tolerance (Cotton- seed) (p.p.m.)	Formulation	Dosage (Pounds of insecticide per acre unless other- wise indicated)	Application (As needed unless otherwise indicated)	Restrictions		References
						Min. days from last application to hand picking	Other	
Cotton aphid	BHC (gamma)	--	EC or D	0.3-0.6		--	--	Tenth Annual Conference Report on Cotton Insect Research and Control
	Demeton	--	EC	0.125-0.4		5	See Precautions.	
	Guthion	--	EC or D	0.25-0.5		--	Do not apply within 21 days of picking. Do not use on other crops for food or forage. Do not pasture cotton that received late appli- cations. See Precautions.	
	Malathion	--	EC or D	0.4-0.75		--	--	
	Methyl parathion	--	EC or D	0.25-0.50		15	See Precautions.	
	Parathion	--	EC or D	0.1-0.25		5	do.	
Cotton fleahopper	Aldrin	--	EC or D	0.2	2-4 weekly.	5	--	Do not pasture cotton that received late applications. See Precautions.
	BHC (gamma)	--	EC or D	0.1	do.	--	--	
	DDT	--	EC or D	0.5	do.	--	--	
	Dieldrin	--	EC or D	0.1	do.	5	--	
	Endrin	0	EC or D	0.08-0.15	do.	5*	--	
	EPN	0.5	EC or D	0.25	do.	3	--	
	Heptachlor	0.1	EC or D	0.2	do.	5	--	
	Toxaphene	--	EC or D	0.75-1.0	do.	--	--	
	Calcium arsenate	--	D	7-10		--	--	
	Endrin	0	EC or D	0.2-0.5		5*	--	
Cotton leafworm	EPN	0.5	EC or D	0.25-0.5		3	Do not pasture cotton that received late applications. See Precautions.	
	Guthion	--	EC or D	0.25-0.5		--	Do not apply within 21 days of picking. Do not use on other crops for food or forage. Do not pasture cotton that received late appli- cations. See Precautions.	

Cotton leafworm continued on page 92.

*Workers entering fields within 5 days after application should be protected.

COTTON INSECTS (continued)

Crop and insect	Insecticide	Tolerance (Cotton- seed) (p.p.m.)	Formulation	Dosage (Pounds of insecticide per acre unless other- wise indicated)	Application (As needed unless otherwise indicated)	Restrictions		References
						Min. days from last application to hand picking	Other	
Cotton leafworm (con.)	Malathion	--	EC or D	0.25-0.5		--	--	Tenth Annual Conference Report on Cotton Insect Research and Control
	Methyl parathion	--	EC or D	0.25-0.5		15	See Precautions.	
	Parathion	--	EC or D	0.125		5	do.	
	Toxaphene	--	EC or D	1.5-2.0		--	--	
Cutworms	DDT**	--	EC or D	1-2		--		
	Dieldrin	--	EC or D	0.3-0.5		5		
	Endrin	0	EC or D	0.2-0.5		5*		
	Toxaphene	--	EC or D	2-4		--		
Fall armyworm	Aldrin	--	EC or D	0.25-0.5		5		
	BHC (gamma)	--	EC or D	0.4-0.6		--		
	DDT	--	EC or D	0.5-1.5		--		
	Dieldrin	--	EC or D	0.2-0.3		5		
	Endrin	0	EC or D	0.2-0.3		5*		
	Toxaphene	--	EC or D	2.0-3.0		--		
Lygus and other mirids	Aldrin	--	EC or D	0.25-0.75		5	--	
	BHC (gamma)	--	EC or D	0.30-0.45		--	--	
	DDT	--	EC or D	1.0-1.5		--	--	
	Dieldrin	--	EC or D	0.15-0.50		5	--	
	Endrin	0	EC or D	0.2-0.5		5*	--	
	Heptachlor	0.1	EC or D	0.25-0.75		5	--	
	Malathion	--	EC or D	0.5-1.0		--	--	
	Parathion	--	EC or D	0.5-1.0		5	See Precautions.	
	Toxaphene	--	EC or D	2-3		--	--	
Pink bollworm	DDT	--	EC or D	2-3	Every 7 days until insects are con- trolled or until harvest.			Also L 339
Grasshoppers	Aldrin	--	EC or D	0.10-0.25		5		
	BHC (gamma)	--	EC or D	0.3-0.5		--		
	Chlordane	--	EC or D	0.5-1.5		--		
	Dieldrin	--	EC or D	0.07-0.125		5		
	Endrin	0	EC or D	0.2-0.5		5*		
	Heptachlor	0.1	EC or D	0.25-0.50		5		
	Toxaphene	--	EC or D	1.0-2.5		--		

*Workers entering fields within 5 days after application should be protected.

**Does not control all species.

Crop and insect	Insecticide	Tolerance (Cotton- seed) (p.p.m.)	Formulation	Dosage (Pounds of insecticide per acre unless other- wise indicated)	Application (As needed unless otherwise indicated)	Restrictions		References
						Min. days from last application to hand picking	Other	
Spider mites	Aramite	--	EC or D	0.33-1.0		--	--	Tenth Annual Conference Report on Cotton Insect Research and Control
	Demeton	--	EC	0.125-0.4		5	See Precautions.	
	EPN**	0.5	EC or D	0.25		3	Do not pasture cotton that received late applications. See Precautions.	
	Guthion	--	EC or D	0.25-0.5		--	Do not apply within 21 days of picking. Do not use on other crops for food or forage. Do not pasture cotton that received late appli- cations. See Precautions.	
	Malathion**	--	EC or D	0.25-0.75		--	--	
	Methyl parathion**	--	EC or D	0.25-0.50		15	See Precautions.	
Stink bugs	Parathion**	--	EC or D	0.1-0.4		5	do.	
	Sulfur**	Safe	D	20-60		--	--	
	BHC (gamma)	--	EC or D	0.5		--	--	
	Dieldrin	--	EC or D	0.5		5	--	
	Heptachlor	0.1	EC or D	1		5	--	
	Parathion	--	EC or D	0.5		5	See Precautions.	
Thrips	Toxaphene	--	EC or D	6		--	--	
	Aldrin	--	EC or D	0.08-0.15	1-4 at 7-day intervals early in season.	5	--	
	BHC (gamma)	--	EC or D	0.1-0.2		--	--	
	DDT	--	EC or D	0.25-1.50	do.	--	--	
	Dieldrin	--	EC or D	0.05-0.15	do.	5	--	
	Endrin	0	EC or D	0.08-0.15	do.	5*	--	
	EPN	0.5	EC or D	0.25	do.	3	Do not pasture cotton that received late applications. See Precautions.	
	Guthion	--	EC or D	0.25-0.5	do.	--	Do not apply within 21 days of picking. Do not use on other crops for food or forage. Do not pasture cotton that received late appli- cations. See Precautions.	

Thrips continued on page 94.

*Workers entering fields within 5 days after application should be protected.

** Does not control all species.

Crop and insect	Insecticide	Tolerance (Cotton- seed) (p.p.m.)	Formulation	Dosage (Pounds of insecticide per acre unless other- wise indicated)	Application (As needed unless otherwise indicated)	Restrictions		References
						Min. days from last application to hand picking	Other	
Thrips (con.)	Heptachlor Toxaphene	0.1 --	EC or D EC or D	0.08-0.15 0.75-1.0	1-4 at 7-day intervals early in season.	5 --	-- --	Tenth Annual Conference Report on Cotton Insect Research and Control
Beet armyworm	DDT Toxaphene	-- --	EC or D EC or D	1.0-1.5 2-4		-- --		
Cotton leaf perforator	Malathion Methyl parathion Parathion	-- -- --	EC or D EC or D EC or D	0.5-1.0 0.5 0.5-1.0		-- 15 5	-- See Precautions. do.	
False wireworms Adults on young plants	Aldrin DDT Dieldrin Toxaphene	-- -- -- --	EC EC EC EC	0.5 1-2 0.25 1-2		5 -- 5 --		
Larvae on seedlings	Aldrin Dieldrin Endrin Heptachlor Lindane	-- -- 0 0.1 --	Slurry with suitable fungicide do. do. do. do.	2 oz./100 lb. seed do. do. do. do.		5 5 5* 5 --		
Field cricket	Aldrin DDT Dieldrin	-- -- --	2.5% D 10% D 2.5% D	20-30 lb. 20-30 lb. 20-30 lb.		5 -- 5		
Garden webworm	DDT Dieldrin Endrin Heptachlor Parathion Toxaphene	-- -- 0 0.1 -- --	EC or D EC or D EC or D EC or D EC or D EC or D	1 0.3 0.3 0.4 0.15 3		-- 5 5* 5 5 --	-- -- -- -- See Precautions. --	
White-fringed beetle	Aldrin Chlordane DDT Dieldrin Heptachlor	-- -- -- -- 0.1	EC, WP, D, or G EC, WP, D, or G EC, WP, D, or G EC, WP, D, or G EC, WP, D, or G	Broadcast 3 lb. In drill row 3/4 lb. Broadcast 5 lb. In drill row 1 lb. Broadcast 10 lb. In drill row 2 lb. Broadcast 1 1/2 lb. In drill row 1/2 lb. Broadcast 3 lb. In drill row 3/4 lb.		5 -- -- 5 5		

*Workers entering fields within 5 days after application should be protected.

Crop and insect	Insecticide	Tolerance (Cotton- seed) (p.p.m.)	Formulation	Dosage (Pounds of insecticide per acre unless other- wise indicated)	Application (As needed unless otherwise indicated)	Restrictions		References
						Min. days from last application to hand picking	Other	
Whiteflies	Malathion Parathion	-- --	EC or D EC or D	0.25-0.75 0.125-0.5		-- 5	See Precautions.	Tenth Annual Conference Report on Cotton Insect Research and Control
Yellow-striped armyworm	DDT	--	EC	1		--	--	
	Dieldrin	--	3% D EC	15 lb. of dust 0.30-0.45 lb.		5	--	
	EPN	0.5	EC	0.3		21	Do not pasture cotton that received late appli- cations. See Pre- cautions.	
	Toxaphene	--	EC 20% D	2-3 15 lb. of dust		--	--	
Brown cotton leafworm	Endrin	0	EC or D	0.33		5*	--	
	Malathion	--	EC or D	0.25		--	--	
	Parathion	--	EC or D	0.125		5	See Precautions.	
Cabbage looper	Endrin	0	EC or D	0.4-0.6		5*		
Flea beetles	Aldrin	--	EC or D	0.25-0.5		5		
	DDT	--	EC or D	1		--		
	Dieldrin	--	EC or D	0.25-0.33		5		
	Toxaphene	--	EC or D	2-3		--		
Greenhouse leaf tier	Endrin	0	EC or D	0.4		5*		
Potato leafhopper and Southern garden leafhopper	DDT	--	EC or D	1-1.5		--	--	
	Malathion	--	EC or D	0.75		--	--	
	Parathion	--	EC or D	0.25-0.5		5	See Precautions.	
Leaf roller	DDT	--	EC or D	2-3		--	--	
	Parathion	--	EC or D	1		5	See Precautions.	
Salt-marsh caterpillar	Endrin	0	EC	0.4-0.5		5*	--	
	Parathion	--	EC or D	0.5-1.0		5	See Precautions.	
Serpentine leaf miner	Parathion	--	EC or D	0.25		5	See Precautions.	

*Workers entering fields within 5 days after application should be protected.

TOBACCO INSECTS

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise specified)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
TOBACCO								
Aphids								
In plant beds	Parathion	--	1% D 1 pt. 25% EC/ 100 gal.	1 lb./100 sq. yd. 5 gal./100 sq. yd.	On foliage.		Do not apply within 5 days before trans- planting. Also see Precautions. Do not apply within 3 days before trans- planting.	L 405
	Malathion	--	4% D 2 pt. 50% EC/ 100 gal.	1 lb./100 sq. yd. 5 gal./100 sq. yd.	do.			
In field	Parathion	--	1% D 1 pt. 25% EC/ 100 gal. 1 lb. 15% WP/ 100 gal.	8-30 lb. 50-100 gal. 50-100 gal.	do.	5 (priming) 15 (cutting)	See Precautions.	
	Malathion	--	4% D 2 pt. 50% EC/ 100 gal. 4 lb. 25% WP/ 100 gal.	8-30 lb. 50-100 gal. 50-100 gal.	do.	3	--	
Budworms								
On any tobacco	Lead arsenate	--	Bait: 1 lb./75 lb corn meal	10 lb.	A pinch into bud of each plant.			FB 1531
On sun-grown	DDT	--	10% D 25% EC	8-20 lb. 1/2 lb. DDT	Directly to bud of each plant with small plunger duster or hand sprayer as soon as young worms appear.		When workers must handle treated tobacco within 5 days after appli- cation of endrin, they should be pro- tected against skin contact by wearing rubber gloves and tightly woven clothing.	L 405, FB 1531
	Endrin	--	1-2% D 19.5% EC	8-20 lb. 0.2 lb. endrin				
	TDE	--	10% D 25% EC	8-20 lb. 1 lb. TDE				
On shade-grown	DDT	--	10% D 25% EC	8-20 lb. 1-2 qt.	Weekly to foliage.			
	Endrin	--	1-2% D	8-20 lb.				
	TDE	--	10% D	8-20 lb.				

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise indicated)	Application	Restrictions		References	
						Min. days from last application to harvest or feeding	Other		
TOBACCO (con.)									
Cutworms									
In plant beds	DDT	--	10% D 2 lb. 50% WP/100 gal.	1 lb./100 sq. yd. 3-5 gal./100 sq. yd.	On foliage.		--		
	Endrin	--	1 qt. 19.5% EC/ 100 gal. 1-2% D	3-5 gal./100 sq. yd. 1 lb./100 sq. yd.	do.		Same as for Budworms.		
	In field	DDT	--	10% D 50% WP 25% EC	10-15 lb. 1-1½ lb. DDT 1-1½ lb. DDT	To plants and adjacent soil surface.		--	
Endrin		--	1-2% D 19.5% EC	10-15 lb. 0.2 lb. endrin	do.		Same as for Budworms.		
Flea beetles									
In plant beds	DDT	--	5-10% D 2 lb. 50% EC/ 100 gal.	¾ - 1½ lb./100 sq. yd. 3-6 gal./100 sq. yd.	On foliage.			L 405	
	In field	DDT	--	5-10% D 2 lb. 50% EC/ 100 gal.	6-25 lb. 10-80 gal.	do.	--		
		Endrin	--	1-2% D 19.5% EC	6-25 lb. 0.2 lb. endrin	do.			Same as for Budworms.
Grasshoppers									
In plant beds	Aldrin	--	Bait: 2 oz./100 lb. wheat bran (free of shorts) water to moisten.	4 lb./100 sq. yd. (dry weight)	Scatter on soil around margin of bed and in open spaces early in morning. Do not put on plants.				
	Heptachlor	--	Bait: 4 oz./100 lb. wheat bran (free of shorts) water to moisten.	4 lb./100 sq. yd. (dry weight)					

TOBACCO INSECTS (continued)

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise specified)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
TOBACCO (con.)								
Grasshoppers (con.)								
In field	Aldrin	--	EC or D	2-4 oz. aldrin	Treat field borders and fields adjacent to tobacco preferably when grasshoppers are immature.		Do not feed treated vegetation to dairy animals or animals being finished for slaughter.	
	Heptachlor	--	EC or D	2-4 oz. heptachlor				
Green June beetle larvae	Parathion	--	1% D Drench: $\frac{1}{2}$ lb. 15% WP/50 gal. water Bait: 1 lb. 15% WP/25 lb. wheat middlings/2 gal. water	2 lb./100 sq. yd. 100 gal./100 sq. yd. 18 lb./100 sq. yd. (wet weight)	To plant bed through cover. To plant bed with sprinkling can. Broadcast bait on up- rooted area of plant bed.		Do not apply parathion within 5 days before trans- planting. Also see Precautions.	
Hornworms	Endrin	--	1-2% D 19.5% EC	8-30 lb. 1-2 pt.	On foliage.		Same as for Budworms.	L 399
	TDE	--	10% D 25% EC 50% WP	8-30 lb. 2 qt. 4 lb.	do.		--	
Mole crickets								
In plant bed	Parathion	--	Drench: $\frac{1}{2}$ lb. 15% WP/50 gal. water	50 gal./100 sq. yd.	To plant bed with sprinkling can.		Do not apply within 5 days before trans- planting. Also see Precautions.	
Tobacco suckfly	Parathion	--	1% D $1\frac{1}{2}$ lb. 15% WP/ 100 gal. water	12-15 lb. 80 gal.	On foliage.	5 (priming) 15 (cutting)	See Precautions.	

Crop and insect	Insecticide	Tolerance (p.p.m.)	Formulation	Dosage (Formulation per acre unless otherwise specified)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
TOBACCO (con.)								
Vegetable weevil								
In plant beds	Aldrin	--	2.5% D	1 lb./100 sq. yd.	On foliage.		--	
	DDT	--	10% D	1 lb./100 sq. yd.	do.		--	
	Parathion	--	1% D	1 lb./100 sq. yd.	do.		Do not apply within 5 days before transplanting. Also see Precautions.	
Wireworms								
Setting water treatments	Aldrin	--	25% WP	4-8 oz./50 gal. water	Around stem of plant as it is transplanted.			
	Chlordane	--	40% WP	$\frac{1}{2}$ lb./50 gal. water	Use 250 gal. per acre and see that soil is wet to the surface.			
	Heptachlor	--	25% WP	4-8 oz./50 gal. water	Effective in hand transplanters, but not always in mechanical trans- planters. Keep well stirred.			
	Lindane	--	25% WP	$\frac{1}{4}$ oz./50 gal. water				
Soil treatments	Aldrin	--	G, WP, or EC	2-4 lb. aldrin	Broadcast on soil at least 1 month before planting. Work into top 6-9 inches.			
	Chlordane	--	G, WP, or EC	4-6 lb. chlordane				
	Dieldrin	--	G, WP, or EC	1-2 lb. dieldrin				
	Heptachlor	--	G, WP, or EC	2-4 lb. heptachlor				

LIVESTOCK INSECTS

Several insecticide uses as recommended for livestock-insect control in AH 103 have been deleted because tolerances have not yet been established and there is evidence that residues occur in meat or milk. In the event tolerances are established which can be met, these insecticides will again be recommended with such modifications as may be necessary.

Precautions.—In applying insecticides to livestock or around barns, do not contaminate feed, feed and water troughs, or allow runoff into streams. Observe all other precautions specified on the inside of the front cover.

Animal and insect	Insecticide	Tolerance (p.p.m.)	Formulation and strength	Dosage (Dilute material per animal unless other- wise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
CATTLE								
<u>Beef and dairy</u>								
Cattle grubs	Rotenone	--	5% D 5% D (7½ lb./ 100 gal. water)	3 oz. 2-4 qt.	Rub thoroughly on back. Wash or apply with power sprayer 1-3 times to backs every 30 days.			FB 1596
Horn flies	Pyrethrins + synergist	--	0.05% + 0.5% S Oil soln. or EC, 1% + 10% S	1-2 qt. 1-2 oz.	As wet spray every 3-7 days. As mist spray daily, by hand or with treadle sprayer.			L 270, 283, 291, 338, 388
	Organic thio- cyanates (Lethane or Thanite)	--	Oil soln., 3-5%	1-2 oz.	do.			
Horse flies, stable flies, and mosquitoes	Pyrethrins + synergist	--	0.05-0.1% + 0.5-1.0% S Oil soln. or EC, 1% + 10% S	1-2 qt. 1-2 oz.	As wet spray every 2-3 days. As mist spray, same as for horn flies.			L 283, 338
	Organic thio- cyanates (Lethane or Thanite)	--	Oil soln., 3-5%	1-2 oz.	do.			
Lice	Pyrethrins + synergist	--	0.025% + 0.25% S		Spray animals thoroughly.			L 319, FB 909
	Rotenone	--	0.006% S 0.5-1% D		do. Dust animals thoroughly			

LIVESTOCK INSECTS (continued)

Animal and insect	Insecticide	Tolerance (p.p.m.)	Formulation and strength	Dosage (Dilute material per animal unless other- wise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
CATTLE (con.)								
Beef or dairy (con.)								
Screw-worms	Diphenylamine	--	35% (Smear 62)	--	Brush or smear on wound and surrounding area, twice first week and weekly there- after until healed.			E-813
	Lindane	--	3% (EQ 335)	Minimum amount necessary to treat wound. Do not use more than 3 tsp. on baby calves.				
Ticks	Arsenic (AS ₂ O ₃)	--	0.175-0.19% soln.	Amount of all these materials will vary with size of ani- mals and amount of hair.	Immerse animals every 14 days.			FB 1057
	Pyrethrins + synergist	--	0.1% + 1% S		As needed; immerse or spray animals thoroughly.			EC-10
	Rotenone	--	5% D (12 oz./gal. water)		As needed; spray ani- mals thoroughly.			
Spinose ear tick	Lindane	--	0.75% in xylene- pine-oil	½ oz.	Inside ears with spring-bottom oiler.			FB 980
<u>Beef</u>								
Horn flies	Methoxychlor	3 (in fat)	EC or WP, 0.5% S 50% WP 5% oil S	2 qt. 1 tbsp. 1 gal./20 ft. of cable.	To backs at intervals of 3 weeks or more. Saturate back-rubbers.	-- --		L 270, 283, 291, 338, 388, E-880
	DDT	7 (in fat)	5% oil S	1 gal./20 ft. of cable	do.	30		
Lice	Lindane	--	EC or WP, 0.03% S	Amount of all these materials will vary with size of animals and amount of hair.	Spray animals thor- oughly; repeat after 2-3 weeks if needed.	30	Do not exceed 0.03% on calves less than 6 months old.	L 319, FB 909, E-880, EC-10
	Methoxychlor	3 (in fat)	EC or WP, 0.5% (1-1.5% for tail louse) 10% D	--	do. Dust animals thoroughly.	--		

Lice continued on page 102.

LIVESTOCK INSECTS (continued)

Animal and insect	Insecticide	Tolerance (p.p.m.)	Formulation and strength	Dosage (Dilute material per animal unless other- wise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
CATTLE (con.)	Toxaphene	--	EC or WP, 0.5% S		Immerse or spray ani- mals thoroughly; one treatment only.	30		
Beef (con.)								
Lice (con.)								
Ticks	Lindane	--	EC or WP, 0.025%	Amount of material will vary with size of animals and amount of hair.	Immerse or spray ani- mals thoroughly; repeat after 2 or 3 weeks or as needed.	30	For spinose ear tick apply sprays at low pressure so as not to injure inner ear. Do not over- dose, especially on calves.	EC-10, E-880
SHEEP AND GOATS	Lindane	--	3% (EQ 335)		Wet infested area and 3 in. around it.			E-813
Fleeceworms								
Lice	DDT	7 (in fat)	EC or WP, 0.25% dip, 0.5% S	Amount of all these materials will vary with size of animals and amount of hair.	Immerse or spray ani- mals thoroughly; one treatment only.	30	Do not use on milk goats.	L 308
	Lindane	--	EC or WP, 0.025% dip, 0.05% S		Immerse or spray ani- mals thoroughly; repeat after 2 or 3 weeks if necessary.	30	Do not use on emaci- ated or lactating animals.	
	Methoxychlor	3 (in fat)	EC or WP, 0.25% dip, 0.5% S		do.	--	--	
	Rotenone	--	0.006% S 0.5-1.0% D		do. Dust animals thor- oughly; repeat after 2 or 3 weeks if necessary.	--	--	
Screw-worms	Diphenylamine	--	35% (Smear 62)		Brush or smear on wound and surrounding area, twice first week and weekly there- after until healed.		Use minimum amount necessary to treat wound.	E-813
	Lindane	--	3% (EQ 335)					

LIVESTOCK INSECTS (continued)

Animal and insect	Insecticide	Tolerance (p.p.m.)	Formulation and strength	Dosage (Dilute material per animal unless other- wise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
SHEEP AND GOATS (con.)								
Keds (sheep tick)	Lindane	--	EC or WP, 0.025% dip, 0.05% S	Amount of all these materials will vary with size of animals and amount of hair.	Immerse or spray ani- mals thoroughly; repeat after 2 or 3 weeks if necessary.	30	Do not use on emaci- ated or lactating animals.	EC-10, E-880, FB 2057
	DDT	7 (in fat)	EC or WP, 0.25% dip, 0.5% S		Immerse or spray ani- mals thoroughly; one treatment only.	30	Do not use on milk goats.	
	Pyrethrins + synergist	--	0.1% + 1.0%		Immerse or spray ani- mals thoroughly; repeat as needed.	--	--	
	Rotenone	--	5% D (12 oz./gal. water)		do.	--	--	
Ticks	Lindane	--	EC or WP, 0.025- 0.03%	Amount of material will vary with size of animals and amount of hair.	Immerse or spray ani- mals thoroughly; repeat after 2 or 3 weeks or as needed.	30	Do not use on milk goats.	EC-10, E-880
SWINE								
Lice	Lindane	--	EC or WP, 0.05- 0.06% dip or S	Amount of all these materials will vary with size of animals and amount of hair.	Immerse or spray ani- mals thoroughly; repeat after 2 or 3 weeks if necessary.	30		L 316, FB 1085
			1% D		Cover animals thor- oughly; one treatment only.	30		
	DDT	7 (in fat)	EC or WP, 0.5%		Immerse or spray ani- mals thoroughly; one treatment only.	30		
			10% D		Cover animals thor- oughly; one treatment only.	30		
	Methoxychlor	3 (in fat)	EC or WP, 0.5%		Immerse or spray ani- mals thoroughly; repeat after 2 or 3 weeks if necessary.	--		

LIVESTOCK INSECTS (continued)

Animal and insect	Insecticide	Tolerance (p.p.m.)	Formulation and strength	Dosage (Dilute material per animal unless other- wise indicated)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
POULTRY								
Lice	DDT	--	5-10% D	1 lb./100 birds	--	30	--	L 366, FB 1652
	Lindane	--	EC or WP, 0.5-1%	--	Spray or paint, cover- ing house, roost, and nests thoroughly.	--	Do not apply on birds or while birds are in house.	
	Nicotine sulfate	--	40% nicotine soln.	1 pt./150-200 ft. of roost	Paint on roosts only.	--	do.	
	Malathion	--	3% roost paint	1 pt./150 ft. of roost	Thorough coverage of house, roosts, and nests. Replace nesting material after spraying.	--	do.	
		--	4% D	1 lb./40 sq. ft. of litter				
	Rotenone	--	1% D	1 lb./100 birds	Direct on birds, roosts, and nests.	--	--	
	Sodium fluoride	--	100% D 1 oz./gal. water	do.	Pinch method. Immerse birds.	--	--	
	Sodium fluo- silicate	--	100% D 1 oz./gal. water	--	Pinch method. Immerse birds.	--	--	
Mites	Lindane, nicotine sulfate, or malathion Same as for Lice					Do not apply on birds or while birds are in house.	L 383, FB 1652
	Sulfur	Safe	1-2 oz./gal. water 100% D		Immerse birds. Cover birds thoroughly.			
Fowl tick	Lindane, chlordane, or toxaphene	--	0.5% S		Thorough coverage of houses, roosts, and nests.		Do not apply on birds or while birds are in house.	L 382, FB 1652
	DDT	--	5% S		do.		do.	

LIVESTOCK INSECTS (continued)

Insect	Insecticide	Tolerance (p.p.m.)	Formulation and strength	Dosage (Dilute material per 1000 sq. ft. for sur- faces and per 1000 cu. ft. for space sprays)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
INFESTED AREAS								
House flies and stable flies in barns	Dipterex	--	1-2% dry B	1 oz.	Broadcast daily for 3 days; as needed thereafter.		Do not use in milk- rooms or contam- inate animal feed or water.	L 390, EC-29
			0.1% liquid B	1 gal.	Sprinkle daily for 3 days; as needed thereafter.	do.		
			Diazinon	--	1% dry B	1 oz.	Broadcast daily for 3 days; as needed thereafter.		do.
	0.1% liquid B	1 gal.			Sprinkle daily for 3 days; as needed thereafter.	do.		
	EC or WP, 1% S	1-2 gal.			Thorough coverage of resting surfaces.	do.		
	Lindane	--	EC or WP, 0.3- 0.5% S	1 gal.	do.	do.		
	Malathion	--	1-2% dry B	1 oz.	Broadcast daily for 3 days; as needed thereafter.	do.		
			0.1% liquid B	1 gal.	Sprinkle daily for 3 days; as needed thereafter.	do.		
			EC or WP, 1% S	1-2 gal.	Thorough coverage of resting surfaces.			
	Methoxychlor	--	EC or WP, 2.5- 5.0% S	1-2 gal. 1-2 oz.	do. Space spray.	--		
	Pyrethrins + synergist	--	0.1-0.2% + 1-2% S	1-2 oz.	do.	--		
Outside barns	Chlordane	--	EC or WP, 2.0- 2.5% S	1-2 gal.	Thorough coverage of exterior surfaces, vegetation, manure, and refuse.		Do not use in dairy barns.	L 182, 283, 338, 390
	DDT	--	EC or WP, 2-5%	½-2 gal.	Thorough coverage of resting places or space spray.			
	Toxaphene	--	EC or WP, 5%		Thorough coverage of resting places.			

LIVESTOCK INSECTS (continued)

Insect	Insecticide	Tolerance (p.p.m.)	Formulation and strength	Dosage (Insecticide per acre)	Application	Restrictions		References
						Min. days from last application to harvest or feeding	Other	
INFESTED AREAS (con.)								
Chiggers	Chlordane or toxaphene	--	EC or WP, 1% S 5% D	2 lb.	Spray or dust at 4-8 week intervals or as needed.		Keep poultry out of treated area for at least 2 days.	L 302, 383, 403
	Lindane	--	1% S or D	$\frac{1}{4}$ lb.	do.		do.	
Ticks	Chlordane, dieldrin, or toxaphene	--	EC or WP, 1% S 5 or 10% D	1-4 lb.	1 or 2 annually.			L 387
	DDT	--	1% S 10% D	1-4 lb.	As needed.			
	Lindane	--	EC or WP, 0.1% S 1% D	0.2-0.4 lb.	do.			
Ants	Aldrin or dieldrin	--	EC or WP, 0.25%	1-2 lb.	Thorough drenching of nests.			L 350
	Chlordane	--	EC or WP, 0.25%	2-4 lb.	do.			
	Aldrin	--	2.5% D	1-2 lb.	Thorough coverage of soil around plants.			
	Dieldrin	--	1.5% D	1-2 lb.	do.			
	Chlordane	--	5% D	2-4 lb.	do.			

REFERENCES

U. S. Department of Agriculture Publications

Farmers' Bulletins

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- FB 980. The Spinose Ear Tick. (1953)
- FB 1057. Cattle-Fever Ticks and Methods of Eradication. (1940)
- FB 1085. Hog Lice and Hog Mange--Methods of Control and Eradication. (1952)
- FB 1468. Muskmelons. (1951)
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